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HENRY WITHERBEE HENSHAW.
MARCH 1912, AGED 62.
WHEN CHIEF OF THE BIOLOGICAL SURVEY.

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HENRY WETHERBEE HENSHAW—NATURALIST
1850-1930.

BY EDWARD WILLIAM NELSON.

Plates XV-XVIII.

HENRY WETHERBEE HENSHAW was one of a little group of about half a dozen enthusiastic young students of birds living in and about Cambridge, Massachusetts, in the late '60's and early '70's of the last century, whose activities became the direct source from which has grown the unparalleled present development in scientific and popular ornithology in America. From that time on through later years his knowledge and rare personal charm enabled him to instil in others some of his own interest in such varied subjects as birds, land shells, diatoms and Indians.

He was an acute and sympathetic observer of nature and her ways and loved all living things and their habits and relations to their surroundings. The exquisite beauty of form and color so lavishly displayed among birds and some other forms of life especially appealed to him. He showed his varied mental activity as the years went on by familiarizing himself with the technical details of such a variety of subjects that it appears evident that much of his work was done for the sheer pleasure of satisfying his desire for knowledge in regard to whatever interested him. He might readily have become an outstanding authority in several branches of science but appeared wholly devoid of ambition in the direction of specialization.

Henshaw had an innate shyness and personal dignity that combined with a ready wit and a whimsical sense of humor gave him a most attractive personality. Though a little reserved at first acquaintance he soon became a most genial companion and made and retained the warm and admiring friendship of all who knew him well.

Henshaw was born at Cambridge, Massachusetts, March 3, 1850, the last of seven children and at an early age showed a marked taste for natural history. Fortunately this was encouraged by his mother who loved the beauties of nature and sympathized with the boy's unusual tastes. The home of the family was near the Charles River marshes where as a boy he wandered freely, playing Indian, roasting clams and becoming intimately acquainted with many of the wild things, especially the birds, in this little primitive world. There at the age of from ten to twelve years he did his first shooting which gave him a closer acquaintance with some of the marsh birds. He was never able to account for his persistent early interest in birds and desire to know their names. In this knowledge he made but little progress at first, for in those days students of birds were rare, and fewer still were those who had any general interest in them.

When he was about fifteen years old Henshaw entered the Cambridge High School, to prepare for Harvard. There he soon became acquainted with a fellow student, William Brewster, who already had begun a scientific collection of birds and eggs and knew much about them. At that time Brewster mounted, or "stuffed" as they termed it, all of his specimens, knowing no other method of saving them, and Henshaw learned the process from him. Very soon after this however the boys became acquainted with C. J. Maynard who was beginning his work as a commercial collector of birds, birds' eggs and other objects of natural history. From him Brewster and Henshaw learned the much more rapid and effective way to save their specimens by making skins somewhat similar to those now generally known in scientific collections. Soon after adopting this method they greatly improved it by the preparation of more beautifully compact, symmetrical and carefully labelled skins. Their results were so pleasing to the eye that their friends promptly followed their lead. One has only to examine the former methods

as indicated by specimens in the older museums to appreciate the value of this contribution to scientific research.

Both were very skillful and it is doubtful if they have ever been excelled in the rapidity with which they could prepare a well made specimen. Dr. C. Hart Merriam tells of an occasion about half a century ago when he witnessed, in the old south tower of the Smithsonian Institution, a contest in preparing bird skins between Robert Ridgway, Elliott Coues, William Brewster and Henshaw. The last two nearly tied in the lead but Henshaw won, having skinned, made up and labelled a good museum specimen of a small bird in less than three minutes.

Henshaw's meeting with Brewster resulted in a close life-long friendship and no doubt had a great influence in the preparation for his career as a naturalist. The two devoted every spare moment to searching all the varied country in the Cambridge region for birds, and their knowledge and collections grew rapidly. During the high school years of this association other kindred spirits joined them, all fascinated by the grace and beauty they found in birds and by the intense mutual pleasure such association always brings to eager young naturalists. Among the special and life-long friendships begun at this time, aside from that with Brewster, were those with Ruthven Deane, Henry Purdie, and others.

As a boy and young man Henshaw's health was always rather delicate and in 1869, a few months preceding the examinations that would have admitted him to Harvard, his physical condition forced him to leave school. In the fall of that year Captain Frank Webber, of the Coast Survey schooner 'Varina,' invited him to be his guest on this boat engaged in surveying the waters along the southern coast of Louisiana. This trip was made and in visiting the delta of the Mississippi and Lakes Borgne and Pontchartrain in the Louisiana marsh region, he began his notable career as one of our ablest field naturalists.

In the spring of 1871 Henshaw returned from Louisiana with his gathering of bird specimens among which was a series of Clapper Rails containing the type of the previously unknown *Rallus saturatus*. His health had improved but the idea of going to Harvard was abandoned and he continued collecting and studying birds with Brewster and other companions about Cambridge.

From about 1868 to 1870 friendly acquaintanceships were made with Isaac Sprague, for whom Audubon named Sprague's Pipit, with E. A. Samuels then gathering information for his book on 'Birds of New England,' with R. E. C. Stearns, the conchologist, and with Bradford Torrey a charming writer on nature subjects. These contacts were stimulating to such an active minded beginner and undoubtedly helped to broaden his viewpoint and to lay a foundation for the versatile interest in different lines of nature study that developed later in life.

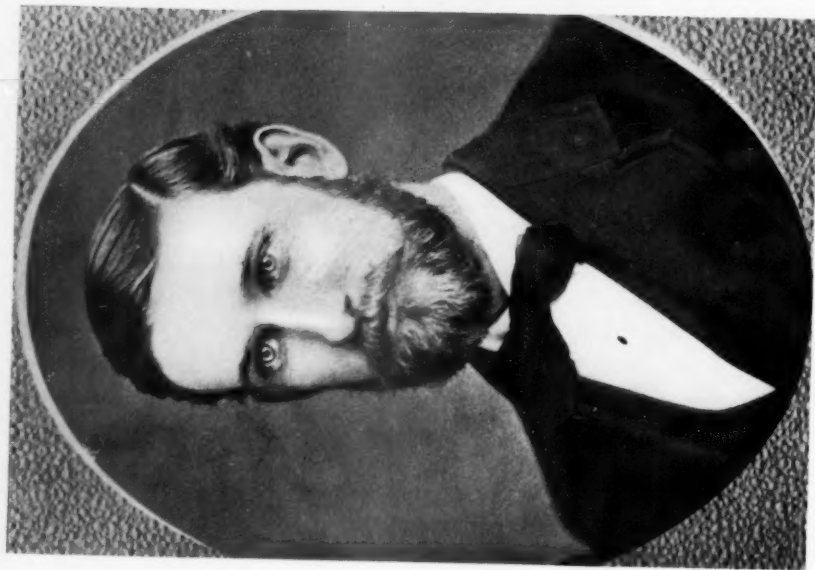
In October 1870, accompanying C. J. Maynard and his bride, Henshaw sailed from Boston for a collecting trip in Florida. Collecting was done first at Cedar Keys, on the west coast, but on January 2, 1871, they arrived at Key West and thence sailed on a "sponger" up through the keys to Miami, where the party located for some time and visited the eastern border of the Everglades.

In a letter to Ruthven Deane from Miami, dated March 20, 1871, he wrote that they were camped in a shanty, one of a small group of little buildings, near the mouth of the river, which then made up the town. He pictured Maynard and his bride sitting on the open porch on opposite sides of a table covered with a white cloth and bearing a lamp when, in the evening, they captured insects attracted by the light. He adds:

"I had in my hand today for the first time a Swallow-tailed Hawk. It is certainly beautiful beyond description. Was shot by a young fellow who lives here and who within a few days has got the idea of collecting a few birds as curiosities. He takes his gun and goes out about 100 yards from the house and knocks over a Swallow-tail. Rough, isn't it, when Maynard or I would have been willing to tramp all day for it? We shall get it however as we've seen numbers of them up the river. Their flight can't be described. Just imagine a bird of that size with all the evolutions of a swallow."

In the Everglades he, with Maynard, was one of the first naturalists to observe in Florida, that tropical wanderer the Snail-eating Hawk or Everglade Kite and for the first time he heard the thrilling scream of a panther. Many interesting southern birds were found during this expedition after which he again returned to Cambridge.

In August, 1870, he collected a specimen of Baird's Sandpiper in Boston Harbor, the first ever taken east of the Mississippi. As neither he nor Brewster were able to identify it they took it to the



1873, AGED 23.

HENRY W. HENSHAW
WHEN ON THE WHEELER SURVEY.



1878, AGED 28.

Museum of Comparative Zoology in Cambridge where J. A. Allen was curator of birds and mammals. He identified the bird and this introduction began a long friendship. Later Dr. Elliott Coues, in Washington, requested to see the specimen and in this way Henshaw became known to Coues, Baird and Ridgway.

A little later he joined with Brewster, Deane and others in organizing at Cambridge the Nuttall Ornithological Club, the first organization of its kind in America.

About this time Henshaw also began a friendly acquaintance with Dr. T. M. Brewer, then an authority on American birds' eggs. Through him at a little later date Henshaw was offered the office of Secretary of the Boston Society of Natural History which was declined as likely to be too confining. Henshaw always believed that Brewer had spoken favorably of him to Professor Baird, and this no doubt resulted in a telegram received from Baird in July, 1872, asking if he would go to Utah as a natural history collector on the Wheeler Expedition. In reply to his inquiry for further information Baird telegraphed: "Report immediately at Salt Lake City; pay transportation and take receipts." So great was Henshaw's desire to study bird life in new fields that on this meager information he set forth and joined the party in camp a mile or so outside the city, which at that time was a large unpaved village with a stream of clear mountain water flowing in ditches down the grass bordered sides of the streets. He and Dr. H. C. Yarrow went south to work near Provo, Utah about the last of July.

By a curious coincidence about this time C. Hart Merriam was on his first western field expedition, working with the Hayden Survey, further northward and I was having my first western experience at a small Mormon village a few miles out of Salt Lake City, collecting birds. So without having any knowledge of one another three young naturalists, later to be close friends and associates for many years, were doing their first western work in the same general region.

Thus began Henshaw's years of connection with Lieutenant G. M. Wheeler's "Geographical Explorations and Surveys West of the 100th Meridian." Wheeler was an officer of the Engineer Corps of the U. S. Army. At that period in various parts of the west Indians were more or less actively hostile toward all white

men, and during his first summer in Utah Henshaw often saw signal smokes by day and fires at night that indicated that the movements of the party were being observed, but though the mental ease and comfort of the members were disturbed no real trouble was experienced. Henshaw's friendly companionability made him a welcome member of the field parties of this survey year after year, especially as his skill with shot gun and fishing tackle enabled him to provide welcome additions of small game and brook trout to the camp fare.

After his appointment as naturalist on Wheeler's Survey in 1872, Henshaw continued with that organization until it was merged with the United States Geological Survey in 1879. A part, at least, of each summer was devoted to field work among the birds in different parts of the West, and the remainder of the year to office work in Washington. Wheeler soon discovered Henshaw's competence and dependability, and although many changes were made in the personnel of the Survey from year to year, and from time to time in different years Henshaw's letters show that conditions in the Survey were such that he was very uncertain of the tenure of his position, he was retained to the close of its existence. He was soon made editor of the Survey publications in addition to the task of preparing his own reports.

In those early days the technique of field collecting, particularly where stops were often made of only a day or two at a time, was undeveloped, and Henshaw's natural ingenuity was exercised so well that the specimens he brought back, after curing them on the backs of pack mules, were in surprisingly good condition. Throughout these field trips the work of the naturalist was always subordinated to the surveying, and many desirable collecting places were passed by unvisited.

After their return to Washington, in the fall of 1872, Henshaw and C. Hart Merriam met and became lifelong friends. Through the years that followed he kept up a desultory correspondence with Deane and Merriam which contains many interesting items on his doings and throws side lights on the times. Fortunately through their courtesy I am able to quote from some of these letters, with explanatory comments where they appear desirable.

Writing from Washington January 27, 1873, he says "Spent last

evening at Prof. Baird's and had a very pleasant time. He holds a sort of reception every Sunday evening when a great many of his scientific friends take the opportunity of calling."

In those years Henshaw made a practice of visiting the Washington market during the hunting season and among the game birds displayed obtained now and then a desirable specimen. On one occasion he bought a fine pair of Bald Eagles for seventy-five cents each. On February 15, 1874, he writes of "market collecting" and says that on some days there were as many as 5000 Robins exposed for sale "to say nothing of Cedar Birds, Shore and Meadow Larks. An occasional Cardinal is to be seen but they take good care usually to wring the neck in such a way as to make the bird useless as a specimen."

A letter dated June 25, 1874, at Santa Fe, New Mexico, says that the expedition was preparing to leave with a six mule team for Fort Wingate, New Mexico, about 160 miles. Beyond the Fort with an escort of six or eight cavalymen, they will enter the Apache Indian country, of Arizona, and will be provided with saddle animals in addition to the team. They were headed for Camp Apache, Arizona, and he expresses the hope that the party may go, as far south as Camp Crittenden, near the Santa Rita Mountains, for "Bendire did not reach so far south, the Indians were too bad. Nor is it wholly unlikely that they may step in and interfere with our plans. Cochise [a noted Apache Chief] is said to have just died and what effect his death will have none can tell."

From Camp Apache on July 15, 1874, he wrote that continuous travel had prevented his accomplishing much but that there he was making a real beginning of the season's work. "The Apaches swarm about our camp which is on the bank of the White River near the Fort. One or more always accompanying me collecting and, as they have the eyes of a hawk, are as good as a retriever. Walking along I often hear a low 'coosh-coosh' and, turning, find one of them pointing at a bird in a tree top that I can hardly see. They seem to think it is the greatest sport in the world." . . . "Apaches may take a liking for my scalp which, by the way, I have had shaved clean to lessen its market value."

Henshaw's party attained his desire and went as far south as Camp Crittenden which proved to be so malarial that several of

the members became ill and their stay was brief. Returning they stopped in a temporary camp at the San Carlos Indian Agency where on October 3, 1874, he writes that they saw confined to the limits of the reservation the "remnant of the San Carlos Indians [Apaches] who escaped from their punishment last year. They are an interesting lot." . . . "The Doctor of the post here says he will furnish me with a couple of Indians to show me where to hunt, and to retrieve my birds when shot."

Henshaw's field work in southern Arizona during the summer and early fall of 1874 was the most notable he ever did as he collected several birds previously unknown within our limits and made many interesting observations. In a letter dated October 25, 1874, from Camp Apache, he wrote in part as follows:

"My dear Merriam: It is only a short time since that a letter came from Locust Grove dated July 12th. I suppose ere this you have departed for the halls of Yale, and are clothed with all the dignity that belongeth to a Freshman. I congratulate you old fellow on the final success of all your hard digging and perhaps envy you a little the enjoyment as well as profit that is likely to come in the next four years. Well, I suppose you want to know what I have been doing for the past four or five months, and what success I have met with. So far as the latter is concerned I believe I may claim a fair measure though I have by no means come up to the standard I had marked out at the beginning. Something of the bad luck we met at the start in Santa Fé has followed us clear through the trip. We got in the southern part of Arizona into a malarial region and as the season was a most unusually sickly one, so sayeth the oldest inhabitant, we have all suffered. Myself with a fever which played the d—l with work keeping me on my back much of the time, and the remainder not much better. I have now 1,000 skins however, and among them some really fine things. Besides the *Cardellina rubra* [= *Cardellina rubrifrons*] which I took early in the season I have four others which I believe new to the fauna, among them a second hummer, quite likely the *Cyanopogon* [= *Calothorax lucifer*] which Father Baird and the rest have always been foretelling would some day turn up within our realm. A woodpecker [*Dryobates arizonae*], fly catcher [= *Myiodynastes luteiventris*] and a warbler [= *Setophaga picta*] complete the list of novelties but by no means the list of varieties. I found myself at Lowell turned loose among *Peucaea carpalis* of Bendire fame and though I found the little beggars exceedingly difficult to capture I felt tolerably well satisfied when I counted up 19. Camp Lowell [near Tucson] by the by, where I was able to spend only four days, I believe to be one of the best points for collecting I ever saw. To birds there is no limit, nor do I believe it is by any means exhausted yet. Its winter fauna even is very rich. On Mt. Graham had

the pleasure of drawing bead on a couple of males of *Eugenus fulgens* as well as a female on a nest. Those two are gorgeous I tell you. Only one did you ask for? All right, take your pick. We got back to this post a few days ago from a little trip in the White Mountains. The season was so late that I expected little, and was not much disappointed when I got nothing but some fine trout fishing. I did however secure a couple of specimens of *Tetrao obscurus*, not in themselves of course rarities but valuable as coming from the most southern locality. I reported them last season and expected to find them still further south, but am now of the opinion that this is the jumping off place for the species. Of game we had a tolerable supply at some points deer being specially abundant. . . .

"I find that our Cambridge man Ingersoll went with Hayden but of his success I know nothing. I also learned what I had strongly hoped had been brought to pass that Aiken was with us. With my thousand and what he does, and he will show a big figure, we shall by no means make a bad show in the bird line. I expect Coues has played the d—l with birds in the N. W. [with Hayden's Survey] though I hear nothing. Aiken and I missed each other by about an hour, as I went out of Colorado Springs on the train on one side of the town he rode in the other leading a pony for me to ride over to the ranch. Too bad, for he had much I wanted to see. . . . I have no address in Arizona. Letters go blind. The Apaches here have been on a *tiswin* debauch for the past week with the result of four killed, several wounded and last night they killed one of the head chiefs. Since February in these drunken rows they have killed not less than 25. Merry cusses, aren't they? We have been detained here now some days awaiting transportation and hope to be away for Tularosa and Santa Fé soon. Practically my work is done. Birds are as scarce as hen's teeth. Shall I see you in W— this winter? Of course, however,—till then adios."

When his birds were more fully identified Henshaw wrote Merriam: "Let me see, haven't I found some new things among my birds which have come in since I wrote home? Certainly I have. *Doricha enicura*, southern Arizona, is the most beautiful of our species never before taken outside of Guatemala. Of *Vireo vicinior* I have six, of *pusillus* eight. Then, too, I find that a strange hawk I saw two specimens of is *Urubitinga anthracina* of Mexico. Another hummer unknown to me and which Ridgway and I differ about I have sent G. N. L. [Lawrence] for determination. Perhaps it is *Calothorax cyanopogon* so says Robert [Ridgway], but I think it is *Circe doubledayi* [*Cyananthus latirostris*]¹ Hab. Southern Arizona."

In regard to these discoveries he wrote from Washington on December 10, 1874, "All the Ornithological Dignitaries were

¹ This specimen proved to be *Calothorax lucifer*.

taken completely by surprise by the showing of tropical birds and it looks as though it might necessitate some change in faunal limits. So, my boy, I suppose I am to say that the season's work has been a fair success. Coues is as cheerful as ever. Brought home 600 skins [of birds] besides many large mammals."

In a letter from Washington, dated January 18, 1875, to Merriam he comments in a jocular way on the uncertainties attending appropriations by Congress for the several Governmental surveying parties then working independently in different parts of the little known West. "Says you 'what's the chance for going out next season?' Says I, 'I'll be hanged if I know.' Just tell me what the Appropriations Committee, before which brother G. M. [Wheeler] and our most Christian friends Hayden, Gardner and Powell [the heads of other Surveys] appear tomorrow morning, will put us down for and then I'll come out strong on the prophet business.'" Later he wrote that the Wheeler Survey had been given \$40,000.

From Washington, February 21, 1875, he wrote Deane "Coues is soon to make a revolution in the names of our birds and as he says is 'going to play h—l with them.' He takes Adam for his authority and thus has been able to grub out any quantity of new names of which the priority has till now been overlooked. How will *M. georgiana* do for the swamp sparrow, *fasciata* for the Song? One thing certain he will get so far back that as he says no one will be able to cut under him, and the names will be established forever and ever. Can't say however that I am so sanguine."

In a letter of April 24, 1875, to Merriam he writes that Mr. P. L. Jouy, of the Smithsonian Institution, had become an enthusiastic bird collector and appeared to be going into the work in earnest. He could already make a good specimen and goes collecting whenever opportunity offers. Mr. Jouy was a young clerk in the Institution whose contacts with Henshaw, Robert Ridgway and others awakened in him a desire to become an ornithologist. He was in delicate health and was unable to advance far. Eventually he broke down and died March 22, 1894, at the age of 38, while trying to recuperate in Tucson, Arizona.

In the letter referred to above he continued "shall surprise you with some of our office news. Dr. Yarrow is going to leave us,

sends in his resignation tonight. Cause not generally known. Probably nothing save that he and Lieutenant G. M. [Wheeler] can't quite agree on the way in which a natural history party should be conducted. He retains my services, so he says, and I go to California for the summer. Received today a Springfield carbine from the armory which I hope to have opportunity of trying on some grizzly in the Sierra Nevada.

"Wish, my dear fellow, that I could be at New Haven and study with you. You are on the right track. Stick to it."

Wheeler's party, as planned, went to California for the summer of 1875. On July 2, Henshaw wrote from a camp on the seashore, about ten miles from Santa Barbara, where he found the birds in much worn plumage. Others of the party were excavating old Indian village sites where remarkable finds were made of implements and other artefacts.

He writes from Moore's Island:

"In a little bed of reeds twenty yards from my tent I find both species of rails *virginianus* and *crepitans* and spent some time this evening watching them as they came out and fed along the edges. The island here, as this piece of land is called, and a veritable island it is just now, made so by the high tide, is fairly alive with Valley Quail. It is safe to say that there are 250 of the beauties in this little spot, and what rather surprises is the fact that they appear to have finished breeding and to be running in regular large bevvies. * * *

"You'd be amazed to see the number of squirrels, ground squirrels, which are found all through California. Their number is legion and the damage done by them to the crops both of grain and fruit is simply incalculable. One sees them by dozens at every step he takes as they run to and fro from hole to hole. Hawks and owls have an easy time of it."

On August 8, while they were camped at old Fort Tejon, Henshaw wrote that he had been disappointed in his results among California birds up to that time but was looking forward with interest to "the unknown regions away up the Kern River and so on toward Mt. Whitney to afford something in the ornithological line worth recounting."

He refers by contrast to his rich finds of the preceding year in southern Arizona but adds that aside from results in ornithology he was having a good time.

"Have I not seen quite a portion of California, that land of promise to all pilgrims from the East? The south part has by no means proved the

land of continuous vineyards and orange groves I had been led to look for from certain newspaper accounts. On the contrary not a small portion of the regions traversed by our party has been one of the most desolate I ever saw, a desolation none the less dreary to look upon in that it comes not directly from nature but from the agency of man. A very large proportion of the country at large lying outside of such large towns as Los Angeles and Santa Barbara has been and is so completely overstocked with cattle and sheep that had fire swept over the country it could hardly have left it more bare. The hills for miles and miles have been completely denuded of grass and to a great extent of shrubbery too, for hungry stock are by no means gourmands. Not a camp have we made where it served of use to turn our mules loose to graze. Doubtless this, a most unusually dry season, has added to the general effect.

"Rothrock [Joseph T., the botanist] and I have just returned from a ten day's trip into the neighboring mountains and from lowest valley to highest peaks the same nakedness of herbage seen. Not an entrancing picture surely. However, you are not to understand that the country is a vast desert. By no means. On the contrary many of the little valleys and river bottoms are or can be made Edens on a small scale and in these are seen many a thrifty vineyard.

"This last trip of ours was a most enjoyable one. We camped at the cattle ranch of an Irishman—an old Californian and as warm hearted and generous a fellow as one would care to meet. How we did pitch into that splendid butter and milk he was so lavish with, and what with these luxuries and venison of our own killing, Mountain and Valley Quail and grey squirrels, what a table we did set. Deer are plentiful here and four fell to our share. Dr. Rothrock takes rather the lion's share in the deer hunting just now though I do a little with my Springfield carbine. I am however, treasuring expectations of certain fine trout streams up Kern River way and should I prove successful in this line as the Doctor with his gun our rations of bacon will be likely to go begging. Our camp here is a pleasant one with plenty of wood, water and lots of shade afforded by the thick groves of fine oaks that form the characteristic timber of the lower mountain slopes here, as in Arizona. The Valley Quail swarm all through the low country giving place in the mountains, as pine timber is approached, to the mountain species. This latter is a magnificent bird and when one has killed a full grown bird, as he weighs it in his hand it seems as though it could not be a quail, but must be a grouse, so large and heavy is it. Fine eating as they are both [quail] must give way in my opinion to the squirrels of which the mountains are full."

After returning to Washington, on December 6, 1875, a letter written to Deane gives information concerning some of the scientific fraternity of that time.

"The most surprising news to me was the marriage of our mutual friend Robert Ridgway, of which I had never had the slightest inkling. Well,

I hope he has struck a good thing but of the damsel I know nothing save that she is the daughter of a wood-engraver [Nichols]. * * * Dr. Yarrow leaves the Survey January 1st. to connect himself with the Centennial Commission and Dr. Rothrock ends his connection also when his report is finished. This virtually ends the Department [of natural history] so far as Wheeler's Survey is concerned and it would not surprise me to see him 'bust' it up at any moment. Possibly, however, I may remain until the spring, at least. Ere the month is out I shall know all about it. Allen [J. A.] is on here with his wife. * * * He is hard at work rearranging the Mammalia for the [Smithsonian] Institution. Coues is as busy as ever grinding away on books which he manufactures to order. There are no new developments of interest in the bird line. While at Oakland [at his uncle's in Fruitvale] in the fall, I succeeded in putting away some 40 skins and kept the house during my stay in a state of siege, the females hardly daring to show themselves out of doors. Among the birds were three *Chamaea fasciata* which I shot right under the windows. I got several good things from Gruber although his collection of skins turned out but few duplicates of special interest or value. Got a single nice *Sphyrapicus ruber* also *Agelaius tricolor* et *gubernator*, also *Vireo huttoni*, a miserable skin, however."

F. Gruber was a German taxidermist, in San Francisco, who was well known in the '70's and '80's of the last century. He had a shop for a long time on California Street but was the owner of a large collection of mounted birds which was on exhibition, in his charge, as a part of the amusement features of the historic "Woodwards Gardens" at the edge of the City. Gruber was a small gruff man, rather repellant at first contact but, as I learned by personal experience, under the crust was a most friendly person to any young naturalist interested in birds. He had little scientific knowledge but evidently had the instincts of a bird lover, and was ready to give time and information to one with similar tastes.

In December, 1875, Henshaw was working on the completion of a large quarto report on some of the results of the Wheeler Survey, especially his own report on birds. He wrote that the book had grown from an estimated 400 pages to more than double that number.

At a somewhat later period, Henshaw took the evening course in anatomy under Dr. Elliott Coues at Columbian University, now George Washington University. This study was undertaken with the idea of taking a full course in medicine, perhaps suggested by the course his friend Merriam was then working on. That this idea was

not very deep seated becomes evident in another letter in which he writes, "Have not yet decided whether I shall follow out medicine to the bitter end and then follow 'pills' for a living or not. My connection with Wheeler will, without doubt, terminate this coming field season when I think it is doubtful if he gets an appropriation to continue his work. But in any case I am certain he proposes to drop natural history work." The last is one of many statements in Henshaw's letters showing the uncertainty that for some years filled his mind in regard to Wheeler's plans.

July 1 is the beginning of the fiscal year of the Government and it is always necessary that appropriations shall be made by Congress and become available on or later than July 1 before any field work can be undertaken for that year. On June 4, 1876 Henshaw writes of expecting to know soon concerning the appropriation for the coming season's work. He announces the appearance of the separates of his report on western ornithology and goes on "what think you of the N. O. C. Bulletin? Allen is now editor and Coues, Baird, Robert [Ridgway] and every one else is going to pitch in and write for it and assure its success. Am inclined to believe that the enterprise will swim. To this end everyone interested in Birds must borrow their little one dollar and pony up. (N. B. I haven't got any dollar to lend.)"

On June 24, he wrote Deane that

"The sole topic of interest now in the minds of Explorers is that of appropriations [by Congress]. It looks now very black for our Survey. The other day Wheeler felt sure enough of his position to map out his ground of operation and it was about settled that I was to go to Lake Tahoe, California. In all probability this would prove a fine region for work. When the matter came up before the House, however, he was thrown out entirely. Hayden and Powell being mentioned for pretty good sums. Last night through an amendment Wheeler was put down for \$50,000. This was about 11 o'clock P. M., and I went home thinking it was all right. At 2 A. M. the question was reopened on some point and the vote went against him. So it looks now as though we were 'busted, by thunder.' Possibly there may be something done for us in the Senate. So you see, my boy, that the ups and downs of legislation are many." * * *

"Tomorrow morning I take a turn into Virginia and try for the young of the Worm-eating [warbler]. Expect to find them if the mounted police do not interfere."

"Coues will probably make a trip into Colorado with Hayden this

summer. Aiken writes me from way down in New Mexico. He had had up to that time but little success and something like a hard time. His mules had but two drinks in three days. Was accompanied by only a small boy as assistant. Had joined an emigrant company, the one which started from Boston for Arizona. Fear he will not meet with the haul I anticipated. He may, however, strike it rich down in Arizona if he don't meet with hostile Apaches. Then Allah preserve him. He is a plucky chap. Knowing that country as I do I wish I were with him."

Delays accumulated to prevent his leaving Washington until a letter dated August 13, 1876, announced his preparations to start for Carson City, Nevada, on his way to Lake Tahoe where he did not arrive to begin his season's work until September. On November 1, he writes from Lake Tahoe of his poor results largely owing to the lateness of his arrival. One interesting observation made in the Lake Tahoe area was the migration of the mule deer across the summit of the Sierra to winter on the west slope. In October, he found only a few deer tracks "and these all pointing toward the western slope." After a very unsatisfactory season in the field, Henshaw returned to Washington whence he wrote on December 15, "Aiken writes me that he is back from Arizona with some 600 skins [birds] and as in addition he brought back all his scalp I think he may fairly claim to have made a successful trip of it. No addition to the fauna. Did not get sufficiently far south owing to the many difficulties presented. He is a plucky fellow sure enough, and now that he has whetted his appetite for Arizona we may expect to see or hear of a second trip."

The following spring a letter to Merriam gives some idea of Henshaw's doings during the early part of 1877.

"Washington April 10, 1877.

"My dear Merriam:

"Busy? Why that's no name for it. I can't get time even Sundays to take a walk out into the country. Have taken hold, at the Prof's [Baird] request, of the type collection of eggs and any spare moments I can get to its rearrangement. Now am going over the duplicates picking out such as belong by right in the type set [meaning the reserve set]—not forgetting meantime to select a set for the collection of H. W. H. Shall have the nucleus of a fine collection by the time I am through.

"Read a little medicine every night with Dr. Yarrow, but it is only a little. Did think for a time of occupying myself this summer and next winter with study and so come up for graduation next March but I have given this up and shall try another trip to the West this summer. Think

it better to stay with the Survey while I can for the dollar's and cent's sake, as well too for my health; then when appropriations stop I can settle down to medicine—meanwhile studying more or less. Wish I just could go on and study with you, for the College [in Washington] is not A1. By the by, Coues has taken the Chair of Anatomy. Gave us the first lecture the other evening and first class it was too. Will go somewhat into Comparative Anatomy and to a certain extent into Zoology."

Henshaw's field work of 1877 began at Carson, Nevada, and extended northward into Eastern Oregon. Near Goose Lake he collected the first specimen ever taken of the curious little brush rabbit that was described years later by Merriam from other specimens as a new species *Lepus idahoensis* and later was made the type of the new genus *Brachylagus*. The season of 1878 covered the same general region.

By Act of Congress, March 3, 1879, the several surveys under King, Powell, Wheeler and Hayden that had been competing each year for appropriations and had been doing topographical, geological, paleontological and other natural history work in various parts of the then comparatively little known West, were united in the United States Geological Survey, with Clarence King as director, soon to be succeeded by Major J. W. Powell. With this reorganization all work in natural history except palaeontology was dropped and thus brought to the fore the subject of Henshaw's future. He made known to Professor Baird his desire to become assistant Curator of Birds in the National Museum under Robert Ridgway. Lack of funds for such a purpose prevented this but he was offered and declined the Curatorship in Herpetology in the Museum as he lacked interest in the subject.

In 1880 Major Powell was organizing the Bureau of American Ethnology. For a long time he had been Henshaw's warm friend and now offered him the opportunity to be connected with the new Bureau, the understanding being that if the work proved to be congenial he would continue in it permanently. The offer was accepted and for some years to follow, he did nothing with birds except during his spare time.

Practically Henshaw's first work as an ethnologist was to secure information among the Indians of the Pacific Coast States for use in the Census of 1880. Then Powell desired a classification of the linguistic families of Indians north of Mexico, and Henshaw with

several assistants, was assigned the task of gathering and preparing the material for Major Powell's use. The result of this work was published in 1891 with credit given for Henshaw's part in it. Major Powell was a firm believer in the biologic method of handling the study and classification of the Indians and appreciated the value of Henshaw's training along those lines as applied to ethnology.

For several years Henshaw and I had corresponded but our first meeting was in December, 1876, when he came to see me in Chicago on his way East after a short season in the field. He had become familiar with my youthful work among the birds about Chicago and encouraged me in my desire to get into field work in the Government service. In those days opportunities of this kind were rare but at the end of December I went to Washington to await an opening. This occurred within two months, early in 1877, when, on Henshaw's recommendation, I was sent to Alaska and thus began my connection with the Government service as a naturalist that has continued almost uninterruptedly ever since.

It is a pleasure to record here that during the long period of ill health that followed my return from Alaska, Henshaw proved himself to be in many ways a sympathetic and helpful friend. One notable kindness was the time he expended in the long task of editing the unfinished report on my Alaska work. Another evidence of his kindly spirit was the pleasure and interest he took, whenever opportunity came, to help young beginners in the study of birds.

During our close association in Washington in the winter and early spring of 1877 and again during the same period in 1882, and during the season we passed together in Colorado and New Mexico in the summer of 1883, he was always an enthusiastic genial and delightful companion. His droll sense of humor and his keen wit were both interesting and amusing for they were without sting for a victim unless circumstances called for it. His judgments of human frailties were tolerant and kindly but he had a very definite personal code of honor that led him to look with marked disfavor on those guilty of meanness and dishonesty.

While I was in Washington the fall of 1881 and winter and spring of 1882 Henshaw had a horse and buggy, which had been

presented to him by Major Powell. In pleasant weather, especially after the birds began coming back in spring, we made very frequent trips into the surrounding country. These were often in the dewy freshness of early morning when the birds were most active. At that time wooded areas lay all about close to the outskirts of town. One locality especially favored by birds and ourselves lay only a short distance north from the corner of U and 7th streets, N. W., now a densely built up section of the city.

At this time Henshaw was building up his fine private collection of bird skins and on our drives he commonly took along a shot gun to use on the larger birds with a little cane gun, shooting a 22-caliber shell loaded with very fine shot. This made little noise and was mainly for use very near town in order not to disturb the susceptibilities of any wandering policemen who might be about. Many a choice warbler or other small bird was added to his collection with this little weapon.

I have never forgotten the pleasure of those drives. Henshaw's intimate knowledge of local birds, their notes and ways, was the source of odd comments on them, and on happenings there or in other times and places that were a source of amused interest to me. While we were driving or walking he would suddenly cease talking and sometimes for a period of ten or fifteen minutes his mind would appear to be occupied by some day-dream. These silent intervals were commonly broken when we were driving by his abruptly breaking out at the top of his voice in a line or two of some popular revival hymn; or, if walking he would make some remark on a subject quite foreign to anything we had been discussing before. I have often thought that in those days his little silences might be brought on perhaps by the natural beauty of our surroundings to which he was very responsive.

An indication of the humorous play of Henshaw's mind, when with one of his chosen companions, was an amusing assumption of superior age and worldly knowledge. At such times he would take on a portentous dignity and addressing his companion as "my son" would give in admonitory tones some nonsensical advice. At other times his companion might be told that he should beware of going on with some project until he had sought the advice of his "Uncle Jeems."

The summer of 1883 Henshaw and I were together first at Colorado Springs, Colorado, and later lived in a cabin on the headwaters of the Pecos River, New Mexico. I found him an unfailingly agreeable camp mate and we had a delightful season in some of the most beautiful parts of the Rocky Mountains. He was an excellent field collector with a quick eye for form and color and a much keener ear for bird notes than I possessed, although his ability in this did not equal that of Brewster.

As we both considered ourselves good field collectors of birds we soon developed a friendly rivalry as to which would secure the rarest specimens. This added much to the zest for each day's wanderings in the wildest, and most lovely mountain country one could wish for. We proved to be so equally matched in our skill that the close of the season found us practically even in the birds taken. Whenever for a day or so I chanced to have a species or two not yet captured by Henshaw his ready imagination always enabled him to prove that among the entire fauna of the country they were the least desirable. This was all done with such genial good humor that it was most enjoyable.

He was a tireless trampler of the mountain sides and on one occasion perpetrated a little practical joke on me that I still recall with amusement. Pygmy Owls were not uncommon but kept so well concealed, high up in big yellow pine trees, that for a long time we were unable to get, or even see one. As I was passing a little grassy park one day I heard the mellow call of one of the little fellows apparently low in the branches of a big pine across the opening. Crossing cautiously I slowly circled the tree several times until my neck became painful from the strain of looking upward, while the tantalizing calls came at regular intervals. Finally as I glanced down to be sure of my footing I caught sight of a heel disappearing behind the trunk of the tree. A shout brought forth Henshaw wearing a broad grin of enjoyment in which I joined for I had been completely deceived.

Following the linguistic classification of the Indians, in 1885, Henshaw, aided for a time by the entire staff of the Bureau, was engaged in compiling and preparing material to make a synonymy of the tribes and settlements of Indians north of Mexico. This material was so well elaborated that it formed the basis of the

'Handbook of American Indians North of Mexico.' This fine work in two volumes published from 1907 to 1910 by the Bureau of American Ethnology contains a wonderful mass of information.

During the years spent in ethnological research Henshaw varied the close office grind by occasional trips to the west coast for the purpose of obtaining needed data. While he and the writer spent most of the summer and fall of 1883 in recuperating about Colorado Springs and in New Mexico he devoted himself to collecting birds for his private collection. At Colorado Springs we accidentally discovered an infallible method of collecting eggs of the Mountain Plover, Horned Lark and one or two other species of birds that were nesting on the adjacent grassy plains. At first we spent some time tramping about but although numerous birds were seen no nests were found. One day we decided to take a horse and buggy so as to give us a wider radius. The grass was only a few inches long and we had driven only a short distance when a plover was seen standing in a crouching attitude thirty or forty yards ahead and to one side. Fixing our eyes on it we drove close beside the spot, the bird departing as we drew near. Where the bird had stood were its nest and eggs. This success led us to repeat the performance not only with the plover but with the other birds. It was late in the morning when we began and before noon we had a fine collection. The birds would have been invisible when sitting on the eggs but the intense heat of the sun was so great that they stood free from the ground over their eggs, thus shading them and being a little cooler. We found this method of finding nests worked on several subsequent days.

During the years he was with the Wheeler Survey, at the end of each season Robert Ridgway, Curator of Birds in the National Museum would go over the season's collection and choose the one, two or occasionally more specimens of a kind he considered desirable for the Museum collection. The remainder was classed as duplicate material to be distributed to other institutions or individuals, and Professor Baird, appreciating Henshaw's field work which was adding treasures to the Museum collection, gave him permission to take such specimens as he desired from these duplicates for his own collection. Through these additions to the specimens he had collected through his early years and at odd

times while living in Washington he had one of the finest collections of birds existing at that time.

In those days no one appreciated the value of series representing a species in all plumages from many parts of its range, and at different seasons. A species was a species and a very few individuals representing it filled the requirements. No special value was placed on a specimen because it had been used as the type in describing a new species and if a better specimen came in, the type went into the limbo of duplicates. Many of them were mounted for the exhibition collection or were sent broadcast to various museums with other "duplicates." Ornithologists owe the late Dr. C. W. Richmond, Assistant Curator of Birds, in the National Museum, a debt of gratitude for the time and ingenuity he spent in more recent years in locating and restoring to the type series of that institution many of these invaluable specimens.

In the early '80's of the last century English ornithologists were in a doubtful state of mind in regard to the rapid development of ornithology in this country and in 1885 Dr. Godman purchased Henshaw's collection of birds and eggs for the British Museum. Included with Henshaw's specimens were the private collection of Dr. C. Hart Merriam and the collection of birds I had made in Alaska except the limited number reserved for the National Museum. This entire collection was carefully labelled by Robert Ridgway and Henshaw and for the first time gave the ornithologists over there a definite idea of what the Americans meant by their trinomials.

While Henshaw was in the west during the season of 1883, the American Ornithologists' Union was formed and he was made a member of the first committee to prepare a code of nomenclature and a check list of North American Birds. He did much unofficial work on this volume which helped so greatly in building up ornithology in America. Henshaw, at one time or another, became a member of various scientific societies but never took an active part in their proceedings owing to an over-powering distaste for speaking to an audience, or functioning as an officer at meetings. He was made vice-president of the American Ornithologists' Union, first from 1891 to 1894 and again from 1911 to 1918, finally retiring after having repeatedly declined the honor of the presidency of the Union which he so well merited.

Henshaw was fortunate that the first fifteen years of his residence in Washington marked what has been, up to the present time, the most actively constructive period in the organization and upbuilding of scientific, and especially biological, research in the history of the Federal Government. The United States Fish Commission had been established in 1871, the year before he joined the Wheeler Survey, and its activities were just beginning. In 1876 the Centennial Exposition at Philadelphia passed over to the Government such a great and varied collection of exhibits that Congress appropriated \$250,000 for a United States National Museum building to house it, and the natural history collections that for years had been accumulating in the Smithsonian Institution. Thus originated the great institution existing today.

As already noted, in 1879, Congress united the four western surveys into the United States Geological Survey, which like the National Museum, has made a great record for results achieved. The same year the Bureau of American Ethnology was organized under the Smithsonian Institution, and it has accumulated a vast store of knowledge concerning the living and extinct natives of America, much of which has been published. Without this organization most of this valuable information would have been lost.

In 1885 Congress made an appropriation of \$5,000 for investigating the migration of birds. Dr. C. Hart Merriam, through whose efforts the appropriation was made, began the work as a section of the then Division of Entomology in the United States Department of Agriculture. The work originating in this way, under his energetic leadership, soon became so interesting and valuable that it was given an independent status in the Department the following year and its increasing lines of research with its economic and regulatory activities have built up the present Bureau of Biological Survey.

Outside the Governmental auspices several other organizations were created in this period in which Henshaw had a helpful influence. With a group of scientific men in Washington, in 1878, Henshaw took an active part in the organization of the Cosmos Club. This club has grown steadily and, unique in the attainments of its membership in science, art, literature, and the professions, is known throughout the world.

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HENRY W. HENSHAW
1894 AGED 43.

By 1888 the increasing responsibilities of the Geological Survey required so much of Major Powell's time that he placed in Henshaw's hands the detailed administration of the Bureau of Ethnology, a work that he carried on for the following four years. During this period he took an active part in the publication of the 'Anthropologist' of which he was the editor for several years.

Major Powell desired to make Henshaw Chief of the Bureau of Ethnology in the late '80's but his sensitiveness to criticism and his reluctance to be placed in authority over the associates who had been working with him caused him to decline this responsibility.

In a letter from Washington dated in October, 1891, Henshaw refers to his slow recovery of strength after six weeks in the hospital. The attack of influenza that caused this, and his long confining over-work culminated in a break down which invalidated him for years thereafter. His condition was such that in 1892 Major Powell sent him to California to do light field work among the Indians and to recuperate. Writing from California in January, 1893, he records his inability to walk much owing to weakness. A letter from the Bidwell Ranch, near Chico, dated May 1, 1894, says "Yes, in January I had high hopes of returning to W.[ashington] and to work soon, for I was getting on well. I came up here to put on the finishing touches and in some way or other walked two or three yards too far and down I went. All my new found strength left me and up to date has not returned. I am now thinking of a sea voyage."

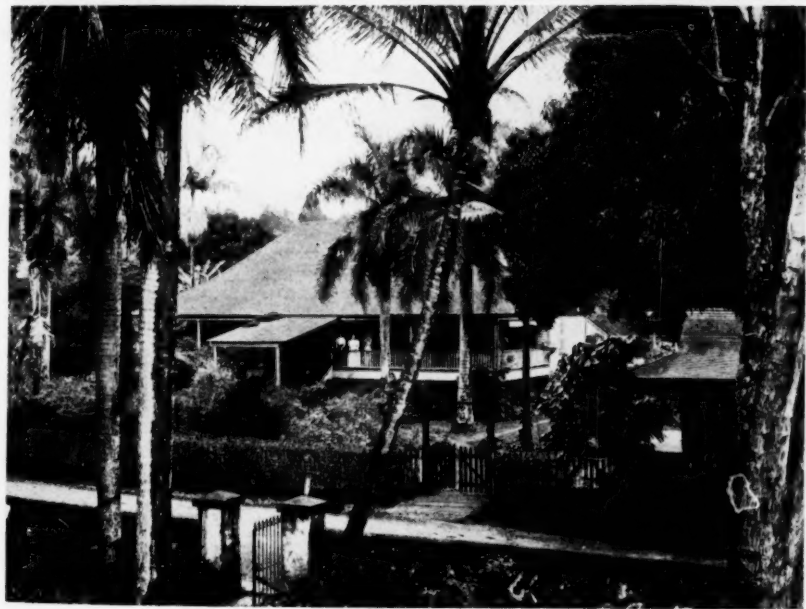
Between 1892 and 1894 Henshaw visited many parts of California and met interesting Californians among whom were, Walter Bryant and Frank Stephens, the latter of whom he visited at his home on Witch Creek, in San Diego County. He collected Indian material for the World's Fair at Chicago, and various specimens of animal life. In 1894 he resigned from the Bureau and in December of that year went to the Hawaiian Islands in search of health.

On April 16, 1896, he wrote from Hilo, Hawaii, of his improved physical condition and turning to another subject says, "No, the mongoose has not driven the birds away from Hilo. The Minah [a starling introduced from India] has probably fought them off, but they are a curious lot, these Hawaiian birds and any change what-

ever in environment seems fatal to them. It is simply astounding the way they disappear. I have been in Hilo over a year and not one native bird have I seen here."

On February 7, 1900 he wrote to Deane from Hilo, "I have taken up bird work again and find that through it I am gaining strength rapidly. For a long time walking was denied me and that is why I have been so long pulling out of the mud. I find Hawaiian birds immensely interesting in their habits and the search for them has the added charm that so many are rare and their habits comparatively unknown. On the other hand the Hawaiian forest is a veritable jungle and practically impassable. One has to cut his way as he goes. Add to this that it rains much of the time and that the temperature is somewhat less than Arctic and you have a combination of difficulties that tax the patience and ingenuity of even a veteran of the Fresh Pond Marshes [near Cambridge, Mass]. I have just returned from a ten days trip into the bush after one of Hawaii's rarest birds and am glad to say that I was successful. The coffee planters are opening trails in many districts where a few years ago there was nothing but dense jungle and this fact is greatly to the advantage of the collector. At the same time the same planters are felling the forest in every direction and if they keep on many, perhaps most, of the island birds are doomed to speedy extinction as already has occurred on the Island of Oahu. * * * I have just read of the death of Elliott Coues. It was a great surprise to me. He was a comparatively young man and as a rule in the best of health. He was a man of great abilities and possessed a charming personality. Few men could be more delightful than he. I knew him well for years and for a long time saw him daily."

From Hilo, March 9, 1901, he wrote: "As to snow, it is true that my acquaintance with the article of late has been rather limited so far as its worst qualities are concerned, but I have only to step to the door of my cottage and I can see miles of snow fields. Mauna Kea, Hawaii's highest mountain, raises its head in the clouds over 14000 feet, and anyone who wants to indulge in snow-balling at any season of the year, or sliding down hill has but to visit its summit to indulge to his heart's content. The snow banks are just about 30 miles from where I am, and that is just about the



Upper: HENRY W. HENSHAW AT CAMP BIDWELL, CALIF., AUGUST 1878, AGED 28,
ON LAST FIELD TRIP ON WHEELER SURVEY.
Lower: HENSHAW'S COTTAGE AT HILO, HAWAII.



right distance according to my way of thinking. Snow is best viewed through a canopy of fig trees, or from the shade of a grove of palms."

One result of Henshaw's bird work in the Hawaiian Islands was a list of the birds with notes on them which was published privately at Honolulu. In regard to this he writes Deane on December 22, 1902, "I am sorry that I have not a copy of the 'list' to send you. The fact is that I made my publisher pay me one hundred dollars for the work on the thing to buy a typewriter. This sum pretty nearly sent him into bankruptcy and I had not the heart to make any further demands on him. I made out a list of the friends I wanted to send the list to and when I found it was going to cost me over \$50.00 I concluded to let it go for the present. Thomas Thoun is the publisher, Honolulu, and if you care to squander a dollar on the vagaries of a friend why he is your man. But let me tell you that it is not worth the money. There should have been plates but then the cost would have prevented it from reaching the folks down here for whom I intended it."

On February 14, 1904, he wrote Merriam that he was at Honolulu negotiating the sale of his collection of more than 1100 Hawaiian bird skins to the Bishop Museum. It contained a number of species already extinct and others that he thought would be gone in another ten years. In this letter he refers to his proposed return to Washington the coming fall. A short letter to Deane written May 20, 1904, says "Your letter was very welcome. It finds me in the agony of packing, for on the first of June I leave the tropics for the mainland. I am prepared to resign all claim to invalidism and trust to be able to join the battle at the front."

Henshaw's residence was at Hilo amid beautiful tropical surroundings. After being there several years, expecting to spend many more years, he became a citizen of the short-lived Hawaiian Republic but when the islands were annexed to the United States as a territory, in 1898, he automatically became again a citizen of the United States.

As his health improved and the picturesque beauty of his surroundings became more impressive he began taking photographs. He proved to have an artistic sense and such a special aptitude for this work that the public demand for his prints became so

insistent that he placed his negatives in the hands of an agent in Honolulu and became famous as a photographer and thousands of his prints were sold and taken to all parts of the world. In his autobiography* Henshaw states that he looks upon his "adventure in photography with great pleasure and regards the results as a partial but grateful return for the delightful years spent in this island garden spot, of the many friends I was privileged to make, and their innumerable acts of kindness and hospitality." Some years after he returned to the United States all of his negatives, more than 300 in number, were purchased by George Shiras 3d and presented to the National Geographic Society. These negatives are of special value as Henshaw secured pictures of native costumes, houses and other views that are difficult or impossible to duplicate.

As might have been expected the marvellous beauty and variety of native land and tree shells for which the Hawaiian Islands are famous throughout the world, among conchologists, soon attracted Henshaw's attention. He began a collection of them with the idea of publishing on them. This materialized only in one short paper on deposits of semi-fossil shells in which he described four new species.

In the summer of 1904 Henshaw returned to California and early in 1905 was again in Washington in good physical condition and eager to get into some congenial work. It was natural that he should desire to be among his old friends in the Biological Survey. To this end he took a Civil Service examination and on June 1, 1905, became Administrative Assistant under Dr. C. Hart Merriam. In December of the same year he was made Assistant Chief of the Survey. In 1910, when Dr. Merriam resigned from the Biological Survey, in order to be free to devote all his time to scientific research, Henshaw was appointed Chief and he continued in this position until his resignation on account of failing health in 1916. For some years before his resignation the writer had been his assistant, and upon his recommendation to the Secretary of Agriculture succeeded him as Chief.

I am glad to record here the satisfaction and pleasure I experienced working in intimate association with such a friend. No

* 'Autobiographical notes,' *The Condor*, 1920, p. 95.

more cordial, considerate and appreciative superior could have existed.

From early in his service in the Biological Survey Henshaw was much impressed by the vast importance to the country of the economic problems involved in wild life and its relations to the welfare of man. The investigations of the food habits of birds and mammals, the establishment of bird and mammal refuges, the enactment and enforcement of conservation laws, the control of birds and mammals when they became pests by their destruction of crops or livestock, or as carriers of disease, all aroused his greatest interest. It was during the period of his connection with the Survey that these economic phases of its activities began an increasing development that has continued to the present time. Although a great lover of birds and other wild life he held strongly that whenever a species became seriously destructive to crops or live stock of any kind that it should be controlled in the area of its destructiveness. This did not mean the extermination of any species for his field experience had taught him that wild things are so fecund that even a drastic reduction in their numbers in parts of their range would have no effect elsewhere and only a temporary effect in the area in which they were destroyed.

While Henshaw was Chief of the Biological Survey that landmark in American conservation the "Federal Migratory Bird Law" originating with George Shiras 3d, known as the "Weeks-McLean Act," was passed by Congress. Concerning this on October 1, 1913, he wrote Dr. Merriam, then in California. "As you are entirely outside of all communication by land or sea I am sure you will be interested to know that at 12:40 today the President signed the migratory bird law in the presence of the Secretary [of Agriculture], Dr. Palmer, Dr. Fisher, Professor Cooke and myself. It was with no little relief that I saw him trace his name with a big quill pen which I had provided, for during the past few days we have been in receipt of numerous protests against signing the bill which had been sent to the President and forwarded to us, so we naturally felt a little doubtful of their effect.

"As a rule the protests do not concern the substance of the law but relate to changes of the seasons to suit the convenience of local sportsmen. Many of them deal with the provision against

night shooting, which in the minds of many sportsmen is a serious prohibition, but the principal cause of protest is the shortness of the spring season. All over the country the sportsmen are fully agreed as to the necessity of a law better protecting game birds and it is rather remarkable how unanimous they are in the belief, or at least the statement, that a Federal law is the only possible means of effecting the result.

"A large number of them admit the iniquity of late spring shooting and are willing to give it up but many of the protests that are now coming in are on account of that clause in the regulations. In other words, many sportsmen believe that it is necessary to protect birds and at the same time they want the privileges of shooting them to the same extent they have always done, and chafe at any really effective limitation. However, the law as a whole seems to be satisfactory to most of the country. Any serious attempt at enforcement of the regulations is, of course, impossible from the Federal standpoint since only ten thousand dollars is available for the purpose and practically most of the enforcement for the first year must depend upon the coöperation of State wardens. The prospects are excellent that in most States we shall obtain hearty coöperation."

Later came the Migratory Bird Treaty with Great Britain in connection with which and the preparation of a bill for its enforcement Henshaw was actively interested.

During his service as Chief of the Biological Survey, Henshaw interested the Secretary of Agriculture, James Wilson, in the publication of a bulletin on common birds to be profusely illustrated with colored plates by Louis Fuertes. As a result in March, 1913, was issued by the Department Farmers Bulletin 513 'Fifty Common Birds of Farm and Orchard.' This proved to be one of the most popular publications ever issued by the Department. The first edition of 200,000 copies was quickly exhausted and several others followed a few years later.

The popularity of this work and the felicity of Henshaw's accounts of the birds interested Dr. Gilbert Grosvenor of the National Geographic Society so much that he obtained from Henshaw two similar articles on other American birds, also illustrated by Fuertes, that were published in the *National Geographic Magazine*. Later

these articles with others were combined and published as a "Bird Book" by the National Geographic Society that has had a very great popularity. These articles have no doubt, resulted in interesting many people in birds and thus aiding conservation, which was Henshaw's desire when he wrote them.

For several years while in the Biological Survey Henshaw was much interested in the study of diatoms. The beauty and variety of the microscopic skeletons of these minute plants opened a new little world to which he had been introduced by his close friend Dr. Albert Mann. Under such skilful guidance Henshaw soon mastered the technique of the microscope and the mounting of the objects. After resigning from the Survey he devoted much more time to this subject and built up a series containing thousands of slides.

He continued to follow in a general way the affairs of the office and took a kindly interest in the activities of his former associates, seeming always eager to discuss with them matters of mutual interest. As time went on his health steadily declined and he died in his 81st year, in Washington, on August 1, 1930.

Washington, D. C.

DAILY LIFE OF THE AMERICAN EAGLE: EARLY PHASE.

BY FRANCIS H. HERRICK.

(Concluded)

Plates XIX-XX.

8. *Eagles Breeding in Confinement.*

Forty-five years ago, in 1886 and 1887, Henry Hulse succeeded in inducing the Bald Eagle to breed in a cage, and so far as known to me, his was the first successful experiment of this kind. Since his account seems to have been completely forgotten or overlooked by all subsequent students or writers, I will give a brief resumé of his results.¹

Hulse took two eagles from a nest at Eagle Point, five miles above Toledo, Ohio, about 1880, and on June 6 of that year two others from another nest, when he thought that they were about a month old, but when in reality they were probably much older. In both instances the birds proved to be male and female and all of them thrived. In the second year of captivity their dark heads began to whiten, and by the end of six years the adult plumage, marked by pure white head, neck and tail, was fully established.

For some time Mr. Hulse kept his eagles in a large cage of heavy wire, but later fitted up for them on a porch of his house a slatted enclosure, 6 by 8 feet square, and 8 feet high; and near the top he fixed a nest-box 3 feet square by 1 foot deep.

On April 6, 1885, the female of the second set, then in her sixth year of cage-life, laid a single egg, sat on it for the full time, but it failed to hatch. In the year following, on March 20, 1886, this bird had two eggs. One of these was infertile, but the other was hatched on April 23, or after incubation of thirty-five days.

Mr. Hulse said that he had handled the parent birds with impunity from the time they were first taken, but that he did not dare to enter their cage after the appearance of the eaglet. This female had a wing stretch of 7 feet, and the male of 6 feet, 8 inches.

¹ See "Eagles Breeding in Captivity," 'Forest and Stream,' vol. xxvii (designated by error vol. xxvi), p. 327. May 20, 1886, and vol. xxviii, p. 392. New York, 1887.

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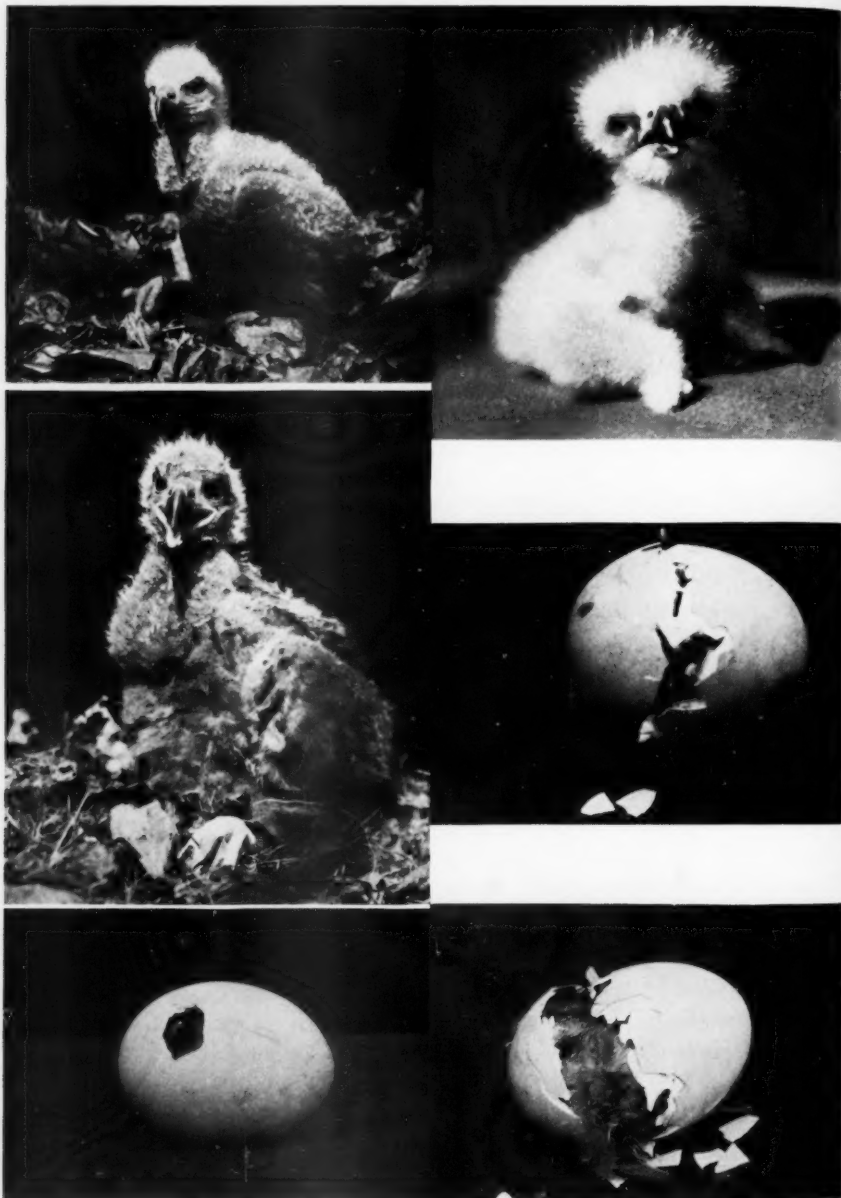
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1 AND 2 (left). YOUNG EAGLE IN SECOND DOWN STAGE WITH REMNANTS OF NATAL DOWN, AND IN TRANSITION TO JUVENAL PLUMAGE.

1 (right) YOUNG EAGLE TWO DAYS OLD.

EGG HATCHED UNDER HEN: (left) PIPPED, 11 A. M.; (right) (1) EAGLET HAS ROTATED EXTENDING CHINK ROUND THE EGG, 3 P. M.; (2) LEFT WING OUT, 3.35 P. M., AND SHELL SEPARATED FIVE MINUTES LATER.

While the female was incubating she was fed by her mate, and she in turn fed the young bird with small bits of fresh fish.

On March 24, 1887, this same bird laid an egg and on the 25th, another, the first hatching on May 1, and the other on the day following, the time of incubation being 37 days. The female, said Mr. Hulse, kept close to the nest, while the male stood at guard farther away. When he was given a fish he would take it directly to the nest, and return for another which he would eat himself.

The success of Dr. F. A. Crandall with Bald Eagles breeding in captivity at the Buffalo Zoological Garden in 1909 and subsequently, is referred to in a brief published notice of that year.¹ In the first instance the mother bird was taken in the Georgian Bay region, Canada, in 1899, and the father was brought from Alaska in 1903, both being from two to three years old when received. If I understand Dr. Crandall's statement in a letter, these birds mated in the autumn of 1906, and four sets of eggs were laid with the following results: no young in 1907; two eaglets reared in 1909 and again in 1910, and one eaglet by a second mate in 1916. This female then died, but one female eaglet was reared from another pair of eagles obtained from Toronto, Canada. The three sets of fertile eggs, just mentioned, were hatched on April 14-18, after 31-46½ days of incubation.

The male of the last pair of eagles mentioned died in 1921, but the female, though unmated, and later her daughter, have been laying eggs every year since, as stated by Dr. Crandall, in his letter of July 16, 1931.²

9. *Eagles' Eggs hatched under Hens, and Growth of Young.*

Our first incubation experiments were made with four eggs of this Eagle obtained on April 1 from a nest in Canada.³ They were

¹ See The 'Zool. Socy. Bull.,' No. 36, pp. 582-83. New York, 1909.

² The most remarkable instance of reproductive activity in unmated birds that has come to my notice is that of two Canada Geese, on the farm of James S. Morrow, Cortland, Ohio, and now upwards of 117 years old, having been captured according to authentic documentary evidence, in Marion county by William Garbison, in October, 1814. The two geese are credited with eggs each year since their capture, and often with more than the number usual with the species. It is estimated that the two have laid more than two thousand eggs in captivity. See C. J. Colmery, 'The Youngstown Vindicator,' August 23, 1931.

³ By Professor J. Paul Visscher, to whose energetic assistance I am greatly indebted.

placed in an incubator in the Biological Laboratory of Western Reserve University, and kept at a temperature of about 102° F., considered normal for the early days of incubation in the domestic fowl, the whole period of which extends to 20-21 days. These eggs appeared to develop normally for about two weeks. All lost daily in weight, and the movements of the cheeping eaglet, when close to the hatching point, could be readily perceived. Then, on April 14 all suddenly died, and apparently at about the same time, but when they were opened a surprising degree of difference in the degree of development attained, was apparent, the oldest eaglet being apparently four days, or more, in advance of the others. The differences between the other embryos were less marked. No greater success that year was obtained with two other eggs.

Three eggs secured from the same nest on March 31, 1931,¹ were placed under hens at the Biological Laboratory, and were normally hatched in 9, 11, and 13 days from the above date. The oldest bird, coming from the first egg, was later ascertained to be a female, while one, and probably both, of the smaller birds were males, a condition precisely like that found at nest No. 5, when the three young were killed in May, 1926. Of the two young eagles which were reared in captivity in 1929 from the second down to the juvenal stages, the smaller bird, which was killed by its older nest- and cage-mate, was a male. The slightly larger and somewhat older bird, which is, I think, a female, was banded and on August 8, 1929 was given to the Zoological Garden in Brookside Park, Cleveland, where it was still living in 1932.

The history of the oldest eaglet from hatching up to about the fifth week, or as far as I was able to follow it, will now be briefly given: April 7, 7 P. M. Shell pierced by egg-tooth;

April 8, 11 A. M. Egg pipped, tip of eaglet's bill showing, and cheeping frequent and vigorous. The shell-opening was slightly enlarged to give the eaglet better access to air:

April 8, 8 P. M. Head of young eagle, bent to left side, and with the body had rotated through 160°. Small pieces of the brittle shell having been chipped off, at each remove, by the egg-tooth (see Pl. XIX), and a wide chink, thus made, extended around one end of the egg. About once in five minutes the struggles of the im-

¹ By Dr. S. C. Kendeligh, of Western Reserve University.

prisoned young bird were renewed, and these movements alternated with cheepings which became more vigorous with each relapse of pressure from within.

April 8, 3 P. M. Left wing of the eaglet out, and the bird's struggles becoming more effective, the chink was widened to one inch. (Pl. XIX, lower right.)

April 8, 3:40 P. M. This eaglet, eighteen hours after its egg-tooth had pierced the shell, and when its two unequal divisions separated and fell apart, hatched in my hand.

The eaglet's eyes remained closed for four hours after its emergence, and the umbilicus, open at birth, soon closed up. The down on the left wing, because it was longest exposed to the air, alone was fluffed out, that is, upon drying off the barbs of each feather had separated. The down feathers over the rest of the body, still wet with the amniotic liquid, showed light, streaked with very dark feathers. These 'black' down feathers, on the hinder parts of the body, on drying became a smoky gray. (See Pl. XX) The remains of the allantois in the cast off shell were inconspicuous, but there was the usual whitish mass of excretory matter in the larger division.

The eaglet is transformed, upon drying, into a downy 'chick,' of characteristic appearance. (Pl. XIX, upper right.) Its eyes and bill are dark, but—the core, however, is light gray and is separated from the mandible by a distinct fold.—Eyes and bill are thus in strong contrast to the light gray down, which becomes darker in the hinder parts of the body and pure white only on the chin, upper neck, and under parts particularly about the umbilicus. The down is of two kinds, a thick under coat, each feather of which is provided with closely set barbs, and an outer, thinner layer of much longer 'hairs' or filo-plumes. The flattened appearance of the eaglet's head at this early stage (see Pl. XX) is due to the distribution of the down and disappears in about a week. The eaglet's shanks, mostly naked in the juvenal and adult states, are thickly covered with down, excepting on their under sides, and remain so through the down stages. To my surprise the small egg-tooth persisted for over a month or until it was worn away or rubbed off.

The eaglet sat up as soon as it was dry, and using its wings to steady it, cheeped with energy as it crawled about on 'all fours,'

resting on its shanks. When a day old it took eagerly the bits of fresh fish offered, and would peck at a finger or at the other eaglets as soon as they approached as competitors for the food.

The second egg hatched on the morning of April 10, thirty hours after its shell had been punctured, and the eaglet, later found to be a male, was smaller than its feminine predecessor. At 9 A. M., April 12, the third egg, determined also, I think, as a male, was pipped, and hatched during the night, and this bird, lighter in color than the others, as well as somewhat smaller, was very active. It would peck at the others, when food was served, and with so much vim as to tumble over when not landing a blow. This brings up the question of the well known pugnacity among the young of the eagle, which will be considered at the close of this section.

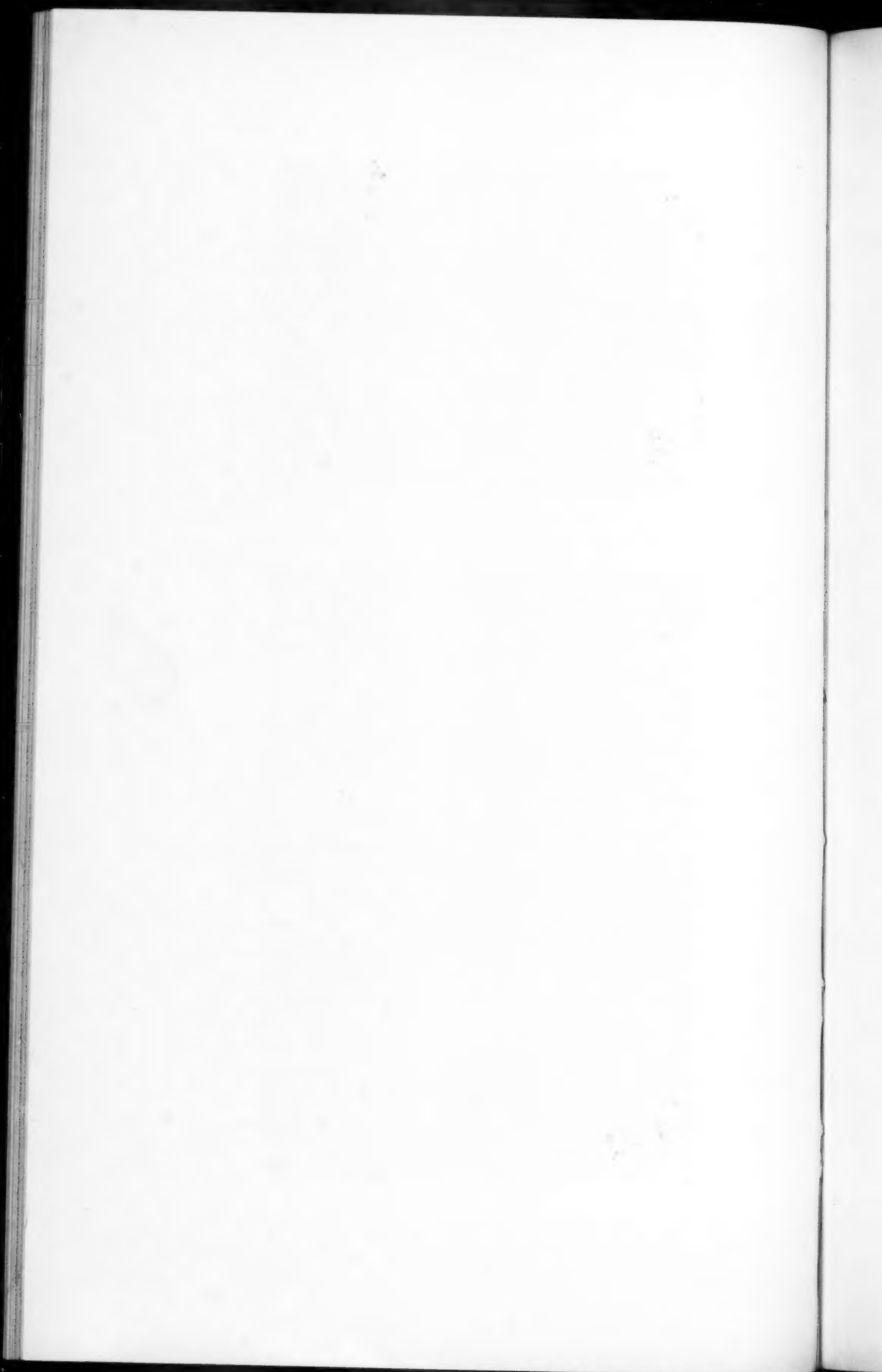
Naturally there is no sharp division between the three plumages that are passed during the ten to thirteen weeks in the eyrie, and the transitional periods are apt to be long. The first, or natal down stage lasts from two and one-half, to three weeks, but when the largest eaglet was two weeks old, and had increased in weight three times (85-250 g.) the second down-plumage, which is a shade darker and much thicker than the first, was coming in all over the body. The exposed down was all of the natal kind, but when this was separated, darker flecks of the thick, on-coming coat could be seen at the roots of all the feathers. At three weeks the eaglet was well along in transition to the second down-coat, individual feathers of which projected barely one-half inch from their follicles.

At four weeks the young eagle had increased its original weight eleven times (from 85 to 959 g.), and was a dark, Quaker gray, but head and neck still carried considerable natal down, and this over the rest of the body appeared only as small regularly distributed flecks. At five weeks this young eagle weighed 1998 grams (4 pounds, 5 ounces), and still moved about on its shanks, but could rise to its toes and take a few tottering steps. As at earlier stages, it could squeal with great persistence, and this shrill whining, when the bird was hungry, could rise to nearly the pitch of an adult eagle's scream.

At six to seven weeks this young eagle was in full transition to the juvenal dress, the gray down being sprinkled everywhere with dark brown feathers. When this stage was reached, while we were



YOUNG EAGLE WHEN CLOSE TO HATCHING POINT. *Upper:* BEFORE, AND
lower: AFTER, REMOVAL FROM THE SHELL.



working in the field, we sometimes had one gray and one almost black bird for several days in the nest, in accordance with the difference of age of the nest-mates. At this time the tail-quills had burst at their tips, and the steel-gray feather-tubes of the primaries and secondaries showed from two to three inches of the definitive juvenal feathers.

10. Contentions among the Eaglets.

In the seven seasons, during which I have made more or less detailed observations at Vermillion, 16 young eagles have been hatched,—twice with three, and five times with two in the nest. How many were eventually reared I cannot say since my late records for three of these years are incomplete, but only one bird has died as a result of disagreements in the nest. It is perhaps doubtful if more than two eaglets are commonly reared, but the three eaglets hatched in 1926, lived in amity for six to seven weeks, or until all perished in consequence of a storm. At the time of their deaths their respective weights were 8, $6\frac{1}{8}$ and 6 pounds, with wing-stretch of 43.5, 39 and 34 inches, the largest being a female, and the two smaller, males. When a lone eaglet is found in a nest in late June or July, it is seldom possible to know whether it had other nest-mates earlier in the season.

Seton Gordon¹ speaks of a stalker who had spent his life in the eagle country of northern Scotland, and had kept careful records of his experience, telling of eighty-two eyries that he had personally known; in eight there had been 3 eggs each; fifteen had held but 1 egg, while fifty-nine, or all the others, contained but 2. He had heard of a nest with 4 eggs, but these were "rather below the normal size," and the Duke of Argyll reported a case of a pair of Golden Eagles that had reared three young. This was thought to have been exceptional, but the statement that "in all the eight clutches of three eggs mentioned above, never more than two eaglets were hatched," is, I believe, erroneous. A considerable loss of eggs may arise through infertility, but the real rub comes in rearing the young.

That the young of the Golden Eagle contend with one another in the nest is evidenced by the fact that an eaglet sometimes disap-

¹ See "Days with the Golden Eagle," p. 55. London, 1927.

pears from the eyrie and is found dead on the rocks below it. Gordon quotes a stalker who once found both of the young eagles dead under the eyrie, and this was thought to have been the outcome of an exceptionally persistent and evenly matched battle.

There is no doubt that the first two or three weeks after the hatching of the first egg are most critical for any eaglets that follow: and the longer the interval between the laying of the first and second eggs, the more acute does this crisis become. If this unfortunate condition is being gradually eliminated through natural selection, the process has made little progress in the Screaming Eagle, in which Siewert found the interval in the one case studied to be ten days; and, although two eggs are commonly laid in this species, but one instance has been recorded in which more than one eaglet had been reared. The reasons for this are twofold: in the first six days of life, according to Siewert's estimates, there is a greater increase in weight than in any later similar period; and again, the older nestling, because of its greater vigor, holds up most of the food and at the same time pecks and otherwise mistreats its weaker brother.

This may not be the whole story, but a similar course of events does sometimes occur in the Bald Eagle, as happened at Vermilion in the spring of 1928. Two eaglets were hatched in that season on about April 24 and 28, and the younger bird was handicapped not only on account of its lesser age, but from the tempestuous weather and the shower of abuse it daily received from its older companion. The mother eagle constantly disregarded the needs of its puny infant, but bestowed every attention on her more vociferous offspring. Thus, on May 18, when the eagle brought in a large fish, the older nestling got 76 pieces, but the younger only 2, and a bad drubbing from his nest-mate in the bargain. On the following day rain and hail beat so relentlessly on the great nest that this much abused eaglet, then hardly able to crawl beneath the sheltering wings of its mother, finally succumbed and was trampled into the great mass of withered grass that lined its bed. It should be noticed that this harsh treatment of the younger bird had often occurred when the parent was away and when there was no contest over the food.

That young eagles, when in juvenal plumage, sometimes fight

to a finish in a state of nature, as two have been known to do when held captive in the same cage, as already related, may be true, but I have never known an instance of it. The finding of a part of the skeleton of a juvenal, however, in the ruins of the Great Vermilion Nest might possibly have resulted from such a conflict.

Cleveland Heights, Ohio.

RECORDING SOUNDS OF WILD BIRDS.

BY ALBERT R. BRAND.

THERE is little question that if it were possible to produce satisfactory phonograph records of birds' songs and calls, the study of bird voices would be greatly stimulated. All previous methods, while useful in their way, were, at best, merely makeshifts, awaiting the time when science should have advanced sufficiently so that faithful reproductions of actual singing birds could be made. Aretas A. Saunders, in "Bird Song," N. Y. State Museum Handbook, 7, 1929, says, "Perhaps some day we can devise a phonograph that can amplify bird songs sufficiently to record those of wild birds. Then we shall be able to play the records over as much as we like and analyze the song in detail." E. H. Forbush, in "Game Birds, Wild Fowl, and Shore Birds," 1912, says, page iv, "Attempts to suggest bird notes on paper almost always are inadequate. My own always have been unsatisfactory."

All classes of bird students would find bird song records extremely useful. The casual bird lover would find identification much easier if he could study the songs and calls at his leisure. The nature-study teacher in the rural and suburban school would be able to make much greater progress with her bird study classes, if in addition to her adequate pictures of birds, she could also have available bird song phonograph records. The serious student of ornithology could study song in a way that has been impossible heretofore.

It was with these thoughts in mind, in 1931, in the Ornithological Laboratory of Cornell University, that these experiments were started. Under Prof. Arthur A. Allen's direction and supervision, and with the aid of the many interested bird students, there was greater chance of success at Ithaca than in almost any other locality.

It is now several years since sound has been added to the motion picture and it naturally follows that if the motion picture industry can take sound out-of-doors, the naturalist should also be able to do so. The advances made in the last ten years in per-

fecting amplifying tubes, and in electrical sound recording, have made both the talking-movie and recording sounds from nature possible. It merely remained to discover what was the most satisfactory method of adapting the various inventions to our needs.

After much trial and error, and many false starts, we finally devised a machine which can be described, in general terms, as an adaptation of the sound half of a "location" motion picture truck. The mechanism is housed in a small closed Ford truck, and takes two men to manipulate it.

The essential points of the method of recording used are as follows. The microphone transforms sound-waves into electrical energy, and amplifiers increase the comparatively feeble microphone current to values sufficient to cause a glow tube to flicker in exact correspondence with the frequency and intensity of the sound. The glow tube is placed in the camera so as to affect a narrow track of the film. The exposure is made through an air slit .001 inches wide. The emulsion side of the film passes over and close to the slit, back of which is the glow tube. The speed of the film is constant, and passes the slit at the rate of eighteen inches per second. The machine would therefore theoretically record vibrations up to 18,000 single vibrations, or 9000 double vibrations per second. Certain mechanical causes make it probable, however, that about 6000 double vibrations is as high as can be recorded by the apparatus used in these experiments. This, however, appears to be sufficiently high to give faithful reproduction of bird song.

In making a sound recording, a cable is run out from the truck to a suitable location for the microphones. Two microphones are carried, one a condenser, the second, a dynamic. They can be set anywhere within 250 feet of the truck, and thus far it has been found that at that distance from a road one can get sufficiently close to any bird whose voice one desires to photograph. The closer one is to the singer the better; as it is advantageous to amplify as little as possible; for the greater the amplification the greater will be the sounds other than those desired; and we have found that one of our greatest difficulties in recording is to get the sound wanted, without a background of extraneous sounds.

The cable from the microphone is connected to the amplifier in the truck, and the increased current is fed into the glow tube, which is inserted into the sound camera. One of the operators is inside the truck, and has on a pair of earphones. He can listen to the sound as it is picked up by the microphone 200 feet away. He also has control of the amplifier switchboard. At the proper moment he throws the switch which drives the motor, and sends the film through the camera. Thus are bird sounds recorded.

Development is practically the same as for motion picture film. The developed film is then ready to be played back; and there are numerous commercial sound and picture projectors that are available for that purpose.

Transferring the film recording to phonograph is entirely feasible, and merely another mechanical process. We have been able to produce a record which gives a truthful rendition of a number of singing birds. How good the sound is depends, very often, on how accurate the phonograph is on which the record is played. A number of the poorer grade phonographs are incapable of reproducing the higher frequencies of certain bird songs; and naturally these songs are heard in a more or less distorted form when played on an inadequate machine; but with the fine electrical reproduction of a good, modern, amplifying phonograph, almost perfect reproduction is attained.

It must not be assumed that the taking of bird sounds is a simple process. It is far from that, just as the getting of good photographs is also difficult. There are a number of factors that enter into bird sound recording that make it much more complicated than the brief description just given would suggest. The truck not only carries the sound camera, amplifier and microphones, but also an imposing array of storage and dry cell batteries; and making the various circuits of direct current give satisfactory results necessitates the assistance of skilful physicists and electrical engineers. Even assuming that the machinery is in perfect order,—and it is delicate in the extreme, and often in need of attention,—other factors come in to harrass the recorder.

It is not as simple as it would seem to get a location where there is absolute quiet. Too great proximity to a traffic road, for instance, makes recording impossible. Frogs and farmyard noises

also interfere, as do aeroplanes, farm tractors, and even insects that buzz close to the microphone. A passing railroad train several miles distant often holds up recording; and we cannot choose locations near babbling brooks and streams, as the sound of the rushing water makes a constant background, so much akin to the mechanical noises of reproduction as to be mistaken for them. Working close to electric wires of any sort is dangerous, as the hum from the wires is likely to be picked up by the microphones. But undoubtedly the worst trouble is with the wind. On windy days it is practically impossible to work, and it has often occurred that after starting out before sunrise to record, on a still morning, before the location is reached and the machinery is set up, a breeze has started up, and all one can do is to take up the equipment, and try again on some more favorable day.

But even with all these impediments, making actual records of wild birds' songs is distinctly feasible; and it would seem logical to assume that the study of bird songs through these records is a branch of ornithology that will be much used in the future. Many of the secrets of avian life are hidden in an understanding of the meaning of song, and with the possibility of actually taking with us from the field the song of the bird, we are in a far better position than heretofore to unravel these mysteries.

It would seem that a new field for the student of bird life has presented itself. The possibilities are very large, the subject one that has been difficult to approach heretofore. It is folly to predict but there are certainly many improvements and changes awaiting development in sound recording.

This, however, does seem apparent:—now that electrical amplification methods can be used in recording sounds from nature, that technique is likely to become almost as indispensable to the ornithologist of the future, as the camera has become to the present, generation, and as the gun was to earlier workers.

*American Museum of Natural History,
New York City.*

EASTERN AND WESTERN BRED WATERFOWL
AT WENHAM, MASSACHUSETTS, IN THE
PAST THIRTY YEARS.

BY JOHN C. PHILLIPS.

MANY loose statements have appeared in recent years on "the scarcity of ducks." The term "duck scarcity" means little in itself and is of slight interest to the ornithologist. We need to know very much more than is implied by so vague a term, for with the press of population, intensive wheat culture and subsidence of water levels many species of ducks are certain to decrease in spite of all that can be done.

What interests us particularly at this time is the question of which species show the greatest relative reduction, which the least, and what, if anything, can be done about it. With things as they are it is inevitable that some kinds of ducks will suffer to a much greater extent than others, some will show little change, and others may actually be on the increase.

It is now rather generally admitted that a few species of diving ducks have greatly declined in numbers. In order to see whether this was borne out by my own figures for northeastern Massachusetts, I subjected the Wenham Lake records to further analysis.

At Wenham Lake we have kept rather careful records since 1900 with the exception of one year, 1911. Reference to these records have been made in several short papers in 'The Auk' and the 'Bulletin' of the Essex County Ornithological Club.

Watch has been kept at the camp at Wenham from late September (sometimes earlier) until mid-November, or later. A note is made of all ducks and geese shot, as well as of all those seen passing; besides various general bird notes and notes on the weather.

We are situated at a point where passing migrant ducks cross Cape Ann, Massachusetts, and stop for a short time only. Very seldom do any ducks become localized in the Lake during the autumn, except Golden-eyes in late November. We are dealing with a continuous stream of scattered migrants, rather than with localized bodies of waterfowl.

It seemed worthwhile to attempt to find by some simple method which species had decreased most during this period, and especially to compare the relative abundance of the eastern with the far western breeding kinds. Actual figures may mean little, since conditions here have changed and are still changing, but if the western bred ducks were compared each year, or in each decade, with the total bag for that year or decade, then it seemed that something of significance might be brought out.

Accordingly I divided all ducks taken during the thirty years into two categories, western-bred and eastern-bred. I next figured the "take" for each year and divided the thirty years into three periods of ten years each. In this way it is possible to compare the proportions of eastern and western ducks at Wenham for the first period 1900-1909, the second period 1910-1920 (1911 omitted), and the last period 1921-1930. The ten year periods were selected because figures for any shorter intervals were certain to be vitiated by the marked annual fluctuations in volume and kind of migration. In all cases only birds actually identified in the hand were considered, and the total number thus accounted for in the thirty years was 4711.

I feel sure that observations on birds seen and not taken would show substantially the same changes in status, but sight records may be open to question, even with the most easily identified of birds, and hence are not here taken into account.

Before considering a summary of the actual figures, it remains to consider the two categories of species—eastern and western breeding. In a few cases the division is somewhat arbitrary but most of the species which are common enough to affect these records are easily classified.

Western Breeding

Mallard
Gadwall
Baldpate
Shoveller
Redhead
Ring-necked Duck
Canvasback

Eastern Breeding

Black Duck
European Widgeon
Pintail
Green-winged Teal
Blue-winged Teal
Wood Duck
Golden-eye

| <i>Western Breeding (cont.)</i> | <i>Eastern Breeding (cont.)</i> |
|---------------------------------|---------------------------------|
| Greater Scaup | Hooded Merganser |
| Lesser Scaup | American Merganser |
| Bufflehead | Red-breasted Merganser |
| Old-squaw | Canada Goose |
| American Scoter | Eastern Brant |
| White-winged Scoter | Blue Goose |
| Surf Scoter | |
| Ruddy Duck | |

In order of abundance for the whole period the different species appear as follows:

| | |
|-------------------------|--------------------|
| Black Duck | Bufflehead |
| Scaups (mostly Lesser) | Hooded Merganser |
| Ruddy Duck | Baldpate |
| Canada Goose | Green-winged Teal |
| Golden-eye | American Merganser |
| Scoters (three species) | Pintail |
| Redhead | Mallard |

and the rest in much smaller proportions, until we come to the rarities like the following:

| | |
|--------------------|------------------------|
| Gadwall (2 only) | Eastern Brant (1 only) |
| Shoveller (5 only) | Blue Goose (1 only) |

Now as to the figures which appear to be significant in calculating the actual, or better, the relative reduction in western-breeding ducks as compared to the total number of birds shot.

Period 1900 to 1909

Eastern-bred waterfowl taken = 1051

Western-bred waterfowl taken = 895

The western-bred species here represent 46%, or nearly half of the total bag.

Period 1910-1920 (1911 has no records)

Eastern-bred waterfowl taken = 866

Western-bred waterfowl taken = 470

The western-bred species here represent 35.1% of the total bag, or just over one-third.

Period 1921-1930

Eastern-bred waterfowl taken = 1094

Western-bred waterfowl taken = 335

The western-bred species here represent only 23.4%, or less than one-fourth of the whole bag.

To sum up, these records show a relative decrease in the western as compared to the eastern-bred waterfowl of at least fifty percent. The actual decrease is much greater than this and if our figures may be relied upon to give a true picture of actual numerical status, we find a reduction of western-bred waterfowl from 895 for the first decade to only 335 for the last decade.

Further analysis shows that if we consider the following species: Mallards, Scaups, Redheads and Ruddies only, we find a reduction from 689 in the first period to only 243 in the latest period. This would be even more striking a figure if we could eliminate the Greater Scaup, because that species has shown little, if any, decrease in numbers during the whole thirty years. (In some of the earlier years the Greater and Lesser Scaup were lumped into one category.)

At recent hearings in Washington before the special Senate Committee on Wild Life Resources, and in other places, it has been rather generally agreed that Redheads, Lesser Scaup and Ruddy Ducks have shown the greatest decrease, especially in the East. In a general way it may be said that the "game" diving ducks have been affected by present adverse conditions more than the surface-feeding ducks. However, we are glad to note that the Canvasback is relatively far better off than the Redhead. We should also hasten to add that these remarks concerning the Ruddy Duck, Lesser Scaup and Redhead apply to the East only, and are not necessarily true for the Western States.

Thus we see that certain species in certain regions quite obviously require some special protection. This is axiomatic, but the question as to how additional safeguards may be applied in a practical manner is something very different.

The Wood Duck has been greatly benefited in most places by special restrictive legislation. The same method might be applied to the Ruddy Duck, at least in the Atlantic Coast States, because

the Ruddy Duck is easily recognized and does not commonly associate with other species or come to decoys readily.

But the case of other diving ducks like the Redhead, Lesser Scaup and Canvasback is very difficult, because all these are easily confused by the average hunter and associate commonly. A prohibition of "battery" shooting (a destructive method of taking ducks) would be a good conservation measure but would work a great hardship on special localities where this device presents the only opportunity for persons owning no land to get any shooting at all. A total prohibition of the "battery" by federal regulation, although justified perhaps from the biological angle, would be very unpopular, and might in the end do more harm to the cause of federal protection than good. A shorter season for "battery" shooting might be proposed and various other suggestions easily come to mind, none of them thoroughly practical at the moment.

The cases of the Redhead and Ruddy Duck are most interesting. Both species are far too tame to successfully meet modern improvements in arms and equipment; both have a southerly breeding distribution and both have very curious and erratic nesting habits which seem to be associated with a partial loss of maternal instinct. These species and the Lesser Scaup conform more nearly to the colony nesting types than do most species of surface-feeding ducks. They appear to be more or less interdependent.

Possibly the peculiarly slipshod egg laying habits of these ducks are an actual disadvantage when the species is confronted by important adverse conditions. This is a point which deserves further study.

Wenham, Mass.

FLUCTUATION IN NUMBERS OF THE EASTERN BRANT GOOSE.

JOHN C. PHILLIPS.

It is not often that a shooting club keeps records which are of any particular interest from the ornithologist's viewpoint. However, the Monomoy Brant Club of Chatham, Massachusetts, has proved an exception for it has kept a faithful log from 1863 until the present time.

This log is a mine of information on the habits of sea fowl, the psychology of sportsmen and all that pertains to that windy neck of sand. I doubt if it can be duplicated anywhere.

A few years ago the five neat volumes of these records were loaned to me by the present Secretary of the Club, Mr. G. C. Porter, and I read them through with real delight. The father of the Club was Mr. Warren Hapgood of Boston, at one time the very active President of the Massachusetts Fish and Game Association. From 1863 to and including 1909 all of the shooting was done in the spring, and practically the whole bag consisted of the American or Eastern Brant (*Branta bernicla hrota*). After that time spring shooting was abolished by law in Massachusetts. I feel that some summary of this log should be available.

At the present time when so many of our sportsmen and others are worried over the wildfowl situation, the extraordinary natural fluctuation in numbers of Brant gives us food for thought and demonstrates the remarkable power of recuperation in one species, at least.

The Brant cannot, of course, be compared directly with any other of our wildfowl in this respect, for this species occupies a most peculiar niche in relation to its natural and human environment.

In the first place it is strictly limited in winter to ice-free waters in the southern extension of the range of the eel grass (*Zostera marina*). North of Cape Cod the winters are too severe and south of Pamlico and Core Sounds in North Carolina eel grass does not grow. Indeed it is noticeably dwarfed in this southern limit of its

range. Brant will eat widgeon grass, sea lettuce and other foods if they have to, but in the long run they appear dependent on *Zostera*.

Since these birds occupy vast open spaces of water and have the habit of packing into large flocks, they are very difficult birds to bag in large numbers. And since they have, with other geese, a relatively long life span, they can stand poor breeding years better than the shorter-lived ducks and teal.

Such things as pollution by mineral oils or a failure of the eel grass crop through poor seeding years, or changes in the salinity of the water may have direct and important influence on the well-being of this species. We appear now (1931-32) to be passing through a period of serious *Zostera* shortage on the Atlantic Coast.

It has long been known that during certain years, or sometimes for several years in succession, very few young Brant are reared.

This fact is, of course, easily apparent because the young of the year are very conspicuous owing to the presence of white edging on the ends of the wing coverts and secondaries. All Brant shooters are familiar with these marks of immaturity. If one plots a curve based on the number of Brant taken on the Monomoy flats by this Club from 1862 to 1909, one is struck by the astonishing irregularity of the graph. Although the conditions were fairly constant, in so far as food and persecution are concerned, I find several peaks of abundance, 1867, 1873, 1876, 1887, 1890, 1891, 1901 and 1906. There was a notable scarcity in 1865 and a very low period from 1877 to 1886 with other low points in 1895, 1900, 1903, and from 1906 to 1909.

I find this note in the log for 1882: "We feel more and more every year that if things continue for a few years more and the birds grow fewer and fewer every year, in ten years there will not be birds enough to render Brant shooting a sport at all."

Yet in 1887 there is the following:

"Never a greater number of Brant passed this Point." "This admitted by all hands." "Four million (estimated) went North between March 25 and May 2." And during this year the records show that about two-thirds were young ones. Of course one must not take the figure four million too literally, for anyone who has attempted to estimate flocks of large birds knows that the tend-

ency to over-estimate is a nearly universal failing among observers. A figure about ten percent of this would probably be nearer the proper mark.

In regard to actual numbers, it may be said that continuous flocks of Brant five to seven miles long, and closely packed have often been noted in Barnegat Bay, New Jersey at one time. Mr. Charles A. Urner of Elizabeth City actually counted as many as eighty thousand on February 22, 1925. In Chatham Bay gatherings of twenty-five to fifty thousand are probably not uncommon, but it would be unsafe without further figures to put the whole population of the Eastern Brant at anything over one-third of a million birds. In proportion to their numbers, however, comparatively few are shot, and protection in the spring has been of great benefit to the species.

Referring to the records we find that again in 1890 and 1891 there was good shooting, and there were enormous numbers of Brant in the Bay so that there seems to have been a complete recovery after the long cycle of depression from 1877 to 1886.

The year 1909 was the last year during which spring gunning was allowed and from that time to the present the records are in no way comparable. Very few Brant stop at Monomoy during the autumn flight and in the old days it was never considered worth while to "rig" for them at all except in the spring.

It is only fair to say that factors other than relative abundance entered into the size of an annual bag and when these are clear cut they are noted in the table to follow. Young Brant decoy much more easily than old birds, and when few young ones were shot during a whole season, it is fairly good evidence that not many were present.

The spring arrival of Brant at Monomoy may be said to begin about the second week in March, although sometimes they arrive the first week. Usually only a few spend the winter there, but sometimes a good many do. The main concentration is between March 25 and April 20, and as a usual thing the Bay is nearly empty of birds by April 25. In exceptional years, and especially when there are plenty of young birds, a few linger on into May. The young birds are said to be in less of a hurry to leave than the old ones.

Something should be said here about methods of shooting at Monomoy. Previous to 1860 the shooting was entirely in the hands of native gunners from Chatham and Orleans. Occasionally an outsider was invited for a week, but the living was so hard that the sportsmen rarely came a second time. Mr. Hapgood records that in 1862 they shot 375 Brant in nine days, while single shots which bagged from thirty to forty birds were not uncommon. Probably a thousand were often taken on the spring flight on the Chatham flats. Boxes were dug into the sand bars and these bars were crossed by the birds in going to and from their feeding grounds. No wooden decoys were used but each year wing-tipped Brant were saved alive and a flock of live decoys gradually built up. The shooting was nearly all done on the water, the flocks swimming up to the bars, often in close formation. The few native gunners had things very much to themselves and the Brant were not unduly disturbed on their feeding grounds. The combination of live decoys with the Brant little disturbed by other shooters made large bags possible in the early years.

In 1862 a conflict of rival native factions opened a way for the organization of a club, and a group of sportsmen built a shanty which was used first in the spring of 1863.

Wooden decoys seem to have been introduced about 1880 and gradually replaced live decoys. Shooting on the wing took the place of "pot" shooting and the birds became wilder. By 1896 the live decoys had nearly gone out of use.

Another change occurred when the feeding ground between the flats and Nauset, the "channel," was filled with sand washed in by the breach through Nauset Bar. This happened in 1887 and was, for a time at least, disastrous to the shooting since the Brant did not have to fly over the places where the boxes were located. Many other changes in the geography of the flats followed and sedge grass began to grow up near some of the old boxes. In 1886 the three clubs, Providence, Manchester and Monomoy were merged.

I present the following summary for what it may be worth. If it shows nothing else, it does point to the marvellous recuperative power of this species after periods of great scarcity.

| Year | Brant Shot | Days of Shooting | Notes |
|------|------------|-------------------|---|
| 1863 | 210 | March 20-April 30 | Mostly old ones. Not as plentiful as last year and do not decoy well. |
| 1864 | 290 | " 9- " | No special notes on young. A good many Brant, but tough weather. |
| 1865 | 72 | " 13- " | Poorest season for Brant on record. All left by April 20. |
| 1866 | 135 | " 13- " | No notes on proportion of young birds. |
| 1867 | 715 | " 11- " | A great many young Brant this season. In poor condition. |
| 1868 | 409 | " 14-May 2 | No special notes on proportion of young. |
| 1869 | 297 | " 31-April 26 | All but two shot this season are old birds! |
| 1870 | 368 | " 22- " | Plenty of young Brant. Nearly all left by April 21. |
| 1871 | 410 | " 15- " | No notes on proportion of young birds. |
| 1872 | 594 | " 30- " | Season very late. More than three-fourths of those shot are young birds. |
| 1873 | 296 | " 15- " | Nearly all old birds. Not one in ten, perhaps not one in twenty, are young ones. |
| 1874 | 208 | " 19- " | Not over six or eight young out of 208. Almost all old birds. |
| 1875 | 218 | " 30- " | Brant late. More than one-half shot are young. More small boats and fish wiers than usual. High course tides. |
| 1876 | 541 | " 18- " | No notes on proportion of young. |
| 1877 | 179 | " 9- " | No notes of interest. Brant appeared March 6. |
| 1878 | 152 | " 18- " | No notes of interest. |
| 1879 | 102 | " 2- " | Only three young Brant shot. Nearly all are old birds. |
| 1880 | 244 | " 17- " | A great many Brant—more than in years. Birds plentiful March 1. |
| 1881 | 175 | " 21- " | No special notes. |
| 1882 | 233 | " 21- " | One-fourth to one-third are young. Wooden decoys making birds much wilder. |
| 1883 | 46 | " 21- " | Worst year of all. Few young birds. Lots of reckless shooting—nine boxes operating. |
| 1884 | 144 | " 24- " | More Brant than for some years. Many young birds. |

| Year | Brant Shot | Days of Shooting | Notes |
|------|---------------|---------------------|--|
| 1885 | 70 | April 5- | 29 Nauset Beach cut changes flats. Very late spring. Birds passing in some numbers but don't stop to feed. |
| 1886 | 153 | March 25- | 27 No special notes on proportion of young. The three clubs merge. |
| 1887 | 380 | " 20-May | 3 Very many young, at least two-thirds of those shot. Estimate 4,000,000 went north March 25-May 2. Never so many. |
| 1888 | 151 | " 22- | 3 Almost no young ones (2 out of 135). At Muskegat 61 old, no young. Nauset bar break filling ship channel. Flats less attractive. |
| 1889 | 309 | " 20- | 1 No special notes on proportion of young. |
| 1890 | 495 | " 5-April | 28 A great year, 50,000 to 100,000 in bay at one time; about two-thirds shot were young. |
| 1891 | 545 | " 19- | 30 Brant arrive early; many February 25. Large proportion of young ones. |
| 1892 | 289 | " 16-May | 2 Bag consists of 207 adult, 82 young birds. |
| 1893 | 197 | " 15- | 3 About half young ones (97 old and 103 young). A wreck loaded with lumber caused disturbance. Poor shooting. |
| 1894 | 285 | " 12- | 1 129 old, 149 young. Scallop fishermen bothering much on flats. Lots of Brant, but can't get at them. |
| 1895 | 29 | " 20- | 1 Worst season yet. Great changes in flats, no food around boxes, over-shooting and Brant chased by boats. Only four young Brant shot. |
| 1896 | 109 | " 18-April | 29 Very few Brant. They arrive and depart immediately. Also a very late season. Scallop boats bad. Flats covered with ice at end of March. |
| 1897 | 166 | " 24- | 21 No notes on young ones. Plenty of Brant but way off shore. |
| 1898 | 336 | " 15- | 27 No notes on young. Best season for years. Large number of wooden decoys now necessary. |

| Year | Brant Shot | Days of Shooting | Notes |
|---|---------------|---------------------|---|
| 1899 | 176 | " 8- 26 | Almost no young this year. Out of forty shot all are old. Not nearly so many Brant as usual. |
| 1900 | 158 | " 21- 23 | No notes on young birds, except that out of fifteen shot, eight were young. |
| 1901 | 453 | " 25- 30 | Many young birds this year. Brant left early. Late flights did not stop. |
| 1902 | 184 | " 25-May 2 | No special notes on young and old. |
| 1903 | 132 | " 18-April 22 | Brant left very early. Extra fine weather March and April. |
| 1904 | 240 | " 23- 28 | Plenty of Brant. No notes on young. An Albino Brant shot. |
| 1905 | 500 | " 22-May 3 | "As many as we have ever seen." 80 shot in one day. No special notes on young. No doubt many young this year. |
| 1906 | 231 | " 21- 2 | Many Brant stayed all winter . . . mild. Good shooting early March. |
| 1907 | 184 | " 22-April 27 | Almost no young ones. 2 out of 182 reported. Birds wild. Weather served well. |
| 1908 | 150 | " 21- 24 | No notes on number of young ones. |
| 1909 | 131 | " 23- 24 | No special notes. Brant left very early. New law against spring shooting passed. |
| From 1910 to date the autumn shooting averages about 55 Brant besides Black Ducks and other wildfowl. | | | |

We do not yet know what causes the destruction of young birds during the bad years. The few meteorological tables that I have been able to gather show monthly average temperatures for far northern posts like Upernavik in West Greenland, but they give no indication that there is any correlation between a severely cold summer and scarcity of Brant the following spring on the Atlantic Coast. More than likely a sudden severe storm coming at the time of year when the young are still delicate may account for great losses in otherwise normal years. Such storms might not affect the mean monthly temperatures in the Arctic at all, yet they might kill directly or cut off the food supply of the downy young.

I may be permitted before leaving these records to mention the names of the Cape Cod residents who made this club possible, and who contributed so much to the comfort and entertainment of the visitors from the city. The names of Alonzo Nye and David B. Nye, George Bearse and "Washy" (Washington) Bearse were famous in their day.

In the fourth volume of the 'Records' there appears the following notice of the death of Alonzo Nye, who was greatly loved by at least two generations of sportsmen.

"In memory of Alonzo Nye, born August 15th, 1823, died September 13th, 1899 aged seventy-six years. Born, lived his life through, and died at Chatham, Massachusetts. About him in boyhood lay the marshes, flats and beaches of Monomoy, the best ground in New England for shore birds and wildfowl. Naturally the boy and his gun kept steady company; he grew up, sturdy, sure of hand, keen of eye, patient, observant. Familiar to him was the long whistle of the beetle-head, the doe-bird's soft trill, the cronk of wheeling brant. This land of marsh and sand flat, the sea always at hand, rising, falling, in its strange tides and currents, with all the myriad denizens of land and water, this was Lon Nye's home. Here he came to manhood, knowing the play of the tides, the strength and change of the winds, knowing each bird by flight or call, its coming and going, its feeding grounds and habits. May we not call him a typical native New England sportsman? He was one of the founders, and the first president and resident member of the Monomoy Branting Club, and as such we, its younger members of today, owe him and pay him our loving remembrance, our

perpetual gratitude. Those associated with him in the formation of the Club are shown in the Club Log, faithfully and accurately kept from the beginning up to the present day. Let us remember too the hundreds of city men to whom he has given glimpses through his magic glass at the ways of plover and brant, and to whom the short, happy days in the sea breeze, the crisp sunshine, have brought new youth, fresh strength, and awakened love of God's best gift, the great outdoors. Of these, many famous and great became his friends and companions; and shall we not believe that he who was the friend of the great, had in himself a touch of greatness? Surely in his simplicity, his faithfulness, his instinctive knowledge of nature, lay something that we may all reverence. At all events he was helpful and faithful to our Club always, and identified with its growth and prosperity even during the last years of his life, when age had lessened his practical usefulness. We younger men lived to see the firm hand tremble, the clear eye grow dim, the sure foot that had trodden thousands of miles of marsh and flat, stumble weakly at a tangle of marsh grass or fail him utterly at a shallow channel. Time and its changes flowed over him till at last death came, and he passed from us. We now, his Club mates and friends, waiting behind bid him Godspeed over the unknown waters, into the calm and sunshine of the eternal morning."

Wenham, Mass.

A NEW MARSH WREN FROM NORTH CAROLINA.

BY EDWARD S. DINGLE AND ALEXANDER SPRUNT, JR.

FOR many years it has been known that an exceptionally dark marsh wren occurs commonly in the salt marshes of the North and South Carolina coasts. Its close resemblance to Marian's Marsh Wren (*Telmatodytes palustris marianae*), of Florida, has caused it to be generally regarded as identical with that form. In recent years however, much study has been devoted to this puzzling group of wrens and the field work of Messrs. Arthur H. Howell and H. E. Wheeler has definitely established *marianae* as a resident form on the Gulf Coast of Alabama and Florida. Therefore, the Atlantic coast bird is completely separated from *marianae* and is without a name. We propose to call it

Telmatodytes palustris waynei, nom. nov. Type No. 3460, ♀.

Collection of the late Arthur T. Wayne, now deposited in The Charleston Museum; Mount Pleasant, South Carolina, April 16, 1897. Collected by Arthur T. Wayne.

Subspecific characters.—Similar to *Telmatodytes palustris palustris*, but smaller; bill shorter and more slender; wing, tail and tarsus average shorter; upper parts darker, inclining more to olive brown; head and nape sooty black, the majority of specimens showing a short, faint median streak; black dorsal area of greater extent; tail and under tail coverts more heavily barred; flanks richer brown; these, and sides of breast with more or less barring.

Measurements of Type.—Wing 45 mm., tail 37 mm., exposed culmen 12.5 mm., tarsus 18 mm.

Average of 23 specimens.—Wing 46.6 mm., tail 38.9 mm., exposed culmen 12.9 mm. tarsus 19.3 mm.

Remarks.—A satisfactory comparison of *Telmatodytes palustris waynei* with *marianae* is not possible on account of inadequacy of specimens of the latter. In size, *waynei* seems to be slightly larger than the Florida form; in color it is quite similar, except that there is more white on the under parts. Messrs. Brimley and Pearson in their 'Birds of North Carolina,' and H. H. Bailey in his 'Birds of Virginia' under the name of *marianae*, give the breeding range of *waynei* to be the North Carolina coast; Bailey extends the range to "Back Bay, Princess Anne County, Virginia." Mr. Wayne, in recording the first specimen collected (The Auk, Oct. 1899) pre-

dicted the breeding range of *marianae* (= *waynei*) to be North Carolina! It is probable that *waynei* breeds well up into Virginia and it undoubtedly intergrades with *palustris*. Mr. Wayne says in his 'Birds of South Carolina,' page 187, of *T. p. griseus*, "There is no evidence that *griseus* interbreeds with *marianae*. . ."

The breeding range of *griseus* extends along the South Carolina coast as far north as the mouth of the Santee River. A glance at the map of this state will reveal the fact that there are no salt marshes of any extent from Georgetown, S. C. to Southport, N. C., in which this wren could breed. The present writers likewise find no interbreeding, and consider this absence of suitable salt marsh to be the principal cause. The range of *waynei* begins at Southport, N. C., where, at the mouth of the Cape Fear River, very extensive and suitable marshes are available. It is nearly one hundred miles from Southport to Georgetown, S. C., and in this area the marshes are very restricted and the growth anything but luxuriant. The cause of this lack of marsh seems to be the absence of inlets and barrier islands and the lack of any fresh water rivers emptying along this stretch. During the present breeding season (1932) we were unable to locate any wrens along this part of the coast and not until Southport was reached did they appear. North of the Cape Fear River the marshes again dwindle to almost nothing.

According to Mr. Wayne, this wren arrives in the vicinity of Charleston, S. C., about the middle of September; his earliest record being the 16th of that month (Birds of South Carolina, page 189). It remains until late in May. A male in song was taken by Mr. Dingle on May 26, 1932 in an old ricefield on the Cooper River. It is common in the Cooper River ricefields during the winter, especially during the months of October and November.

In the preparation of this article the writers are indebted to the following sources for examination of specimens and other information: Dr. Eugene E. Murphy of Augusta, Georgia; Mr. Ivan R. Tomkins of the U. S. Dredge "Morgan," Savannah, Georgia; Mr. E. Burnham Chamberlain of Charleston, S. C.; The Charleston Museum and the U. S. Biological Survey.

Charleston Museum,
Charleston, S. C.

GENERAL NOTES.

Notes on the Food of Grebes.—North American grebes are commonly known to feed extensively upon various kinds of fishes. A study of the feeding habits of these birds is reported upon by Wetmore (U. S. Dept. Agr. Bulletin No. 1196, Jan., 1924), in which fishes comprised the following percentages of the stomach contents of specimens of five species studied: Western Grebe (*Aechmophorus occidentalis*), 100%; Holboell's Grebe (*Colymbus grisegena holboelli*), 55.5%; Horned Grebe (*Colymbus auritus*), 34.6%; Eared Grebe (*Colymbus nigricollis californicus*), 9.8%; Pied-billed Grebe (*Podilymbus podiceps podiceps*), 24.2%. Although at least half of the one hundred or more lakes within the altitudinal range of grebes in Lincoln County, Montana, contain fishes of some kind, my observations indicate that, except possibly in the case of the Holboell's and Eared Grebes, fishes constitute a much smaller proportion of the total food of these birds here than is shown by the above figures.

The only Western Grebes that I have found breeding in Lincoln County chose as their nesting site a small, rush-grown lake which contains various kinds of aquatic insects and crustaceans, but no fishes of any kind. Both in 1922 and 1923 a pair of these birds nested and raised five young on this lake. Western Grebes occur in this locality rarely during migrations and, although they seem to prefer the larger lakes, nearly all of which contain trout, they occur also on lakes containing no fishes of any kind.

The Holboell's Grebe occurs here rarely as a migrant and summer resident but I have obtained no evidence of its nesting. My scattered records of its occurrence are divided about evenly between lakes containing fishes and those in which this food is not available.

Both the Horned Grebe and the Eared Grebe, occur throughout the summer and nest regularly, only at rush-grown lakes which contain no fishes whatever. To be sure, I have visited frequently during the breeding season only about twenty lakes; but of these, all except five contain fishes; and among these five are the three at which the grebes regularly nest. During migrations, and irregularly during summer, these birds occur also at lakes containing fishes.

A few pairs of Pied-billed Grebes nest regularly at two of the three "fishless" lakes inhabited by the Horned and Eared Grebes. Although birds of this species undoubtedly occur, at least during migrations, at lakes where fishes may be obtained, it happens that I have as yet noted Pied-billed Grebes only at the two lakes where they nest.—WINTON WEYDEMAYER, Fortine, Montana.

The Diablotin in Dominica.—Mr. Stephen Haweis in a recent letter from Dominica informs me of the capture in Roseau, Dominica, of a specimen of the rare Diablotin (*Pterodroma hasitata*). According to a clipping

from the 'Dominica Chronicle' forwarded by Mr. Haweis, the bird was obtained alive on May 2 by Miss Mary Rose Rock, having been found in an exhausted condition near the Fort, following a day of storm and rain. The specimen is reported to be in the possession of Dr. Thaly. This seems to be the only record of the species in Dominica for many years.—ALEXANDER WETMORE, *U. S. National Museum, Washington, D. C.*

Double-crested Cormorant in Inland New York.—On May 29, 1931, my attention was called to a strange bird on Mohonk Lake. After careful study with 8 power glasses from a cliff about 250 feet from the bird it was identified as a Cormorant (*Phalacrocorax a. auritus*) though I had never seen one in the flesh before.

It turned its head nervously from side to side, often pointing its bill up into the air.

From the literature at hand this would appear to be a first record for this bird in Ulster County, and perhaps the third or fourth for interior New York during the spring migration.—DANIEL SMILEY, JR., *Mohonk Lake, N. Y.*

Great Blue Heron in Cuba and Panama.—In the A. O. U. 'Check-List,' Third Edition (1910), the winter range of *Ardea herodias herodias* Linnaeus, is given as "Oregon, the Ohio Valley, and Middle States south to the West Indies, Panama, and Venezuela." At this time the southern races of this bird had not been clearly separated and this probably included them all. Two years later, however, when Dr. Harry C. Oberholser published 'A Revision of the Forms of the Great Blue Heron (*Ardea herodias* Linnaeus)'¹ he was unable to assign to the typical race, any specimen of West Indian, Central or South American collection south of Tamaulipas, although the material assembled for study, comprised the series of this species from most of the large collections in the country.

Thomas Barbour in 'The Birds of Cuba'² lists the species under the subspecific name *Ardea herodias repens* Bangs and Zappey, while in the revision of the species previously mentioned, Dr. Oberholser describes the form *Ardea herodias adoza*, and assigns thereto all specimens then studied from the Bahamas, West Indies, and Lesser Antilles. As other faunal reports for Cuba likewise fail to list true *herodias*, the following case appears to be the first record for that country: A Great Blue Heron, No 320371, banded by Wm. I. Lyon at Hat Island, Green Bay, Wisconsin, on February 9, 1931, was killed on February 9, 1932, on the estate of General Juan Lorente, on a point known locally as "Cormenal." This is located on the south coast of the Province of Pinar del Rio, Cuba. The recovery of this bird was reported to the Biological Survey by Señor Arcadio Ocequera, a sportsman of Candelaria, Cuba.

Writing in 1913, L. L. Jewell³ in his paper 'Some North American Birds

¹ Proc. U. S. Nat. Mus., vol. 43, pp. 531-559, 1912.

² Mem. Nuttall Ornith. Club, vol. 6, Cambridge, 1923.

³ The Auk, vol. 30, pp. 422-429.

in Panama,' under the heading of this race says "One positive record on October 29, 1911. This bird was seen at Mindi and inspected closely. In fact it seemed very reluctant to take wing and only did so after repeated approaches to probably thirty feet." Although the subspecific designation is used, he simply followed the 'Check-List.'

Nevertheless, a definite record for *herodias* in Panama has been published,¹ being a bird marked with Biological Survey band No. 334402, at Waseca, Minnesota, on May 23, 1925, by E. A. Everett, which was recaptured in September, 1925, on Gatun Lake. More recently Griscom² records three immature specimens taken in November and December at Perm , and one during the same period at Obaldia. These stations are within a comparatively few miles of the Colombian border.

In the distribution of *Ardea h. herodias* in the Fourth Edition of the 'Check-List' (1931) West Indies has been deleted. Information now available indicates that the winter range as outlined in the Third Edition was more nearly correct, although probably the word "casually" should be inserted to make it read "south casually to the West Indies, Panama, etc."—FREDERICK C. LINCOLN, *Biological Survey, Washington, D. C.*

American Egret in the Valley of Virginia.—On July 26, 1932, at the Big Spring Pond, seven miles west of Lexington, Va., I observed a single American Egret (*Casmerodius albus egretta*). The farmer who lives at the pond told me that there were two present on the previous day. So far as I have been able to ascertain this is the first time that the Egret has been reported from western Virginia.—J. J. MURRAY, *Lexington, Virginia*.

Louisiana Heron Again on the New Jersey Coast.—On August 20, 1932, while crossing the meadows at Avalon, Cape May Co., N. J., I found an adult Louisiana Heron (*Hydranassa tricolor ruficollis*) busy feeding on a shallow pool near the road. It was very active running forward and darting the bill right and left as it crouched low over the water. It was quite fearless and did not take wing when we drove on after watching it at close quarters for some time. Every detail of its plumage could be clearly seen. This is I believe only the third record in recent years for the New Jersey coast.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

Least Bittern in the Connecticut Valley in Massachusetts.—This species was regarded by the late R. O. Morris as very rare, even near the Connecticut line where conditions were most to its liking. He recorded in 'The Auk' (Vol. 31, 1914, p. 544) the first and only discovery of its nest there. Since then we have had five rather interesting records from farther north, where before it was practically unknown.

At Orange on May 5, 1922, a Least Bittern was picked up, which died

¹ See Tech. Bull. No. 32, U. S. Dept. Agri., p. 31, 1927.

² The Ornithology of the Caribbean Coast of Extreme Eastern Panama. Bull. Mus. Comp. Zool., vol. 62, No. 9, pp. 304-372, Jan., 1932.

the next day, having apparently collided with some overhead wires. It was identified by D. H. Harrington.

At Huntington on May 9, 1925, another was found in a poultry-yard, pecked to death by a setting hen which apparently mistook it for a hawk. It was identified by A. A. Cross.

At South Hadley, early in July 1927, one was observed walking about at the edge of a slough, by R. P. Stapleton.

At Holyoke on April 23, 1932, one was seen standing rigid in the typical bittern pose on the perfectly bare edge of a fish-pool on the estate of F. H. Metcalf and was there on both of the two days following.

At Hadley on June 9, 1932, a male was twice flushed from a narrow, reed-grown slough well protected by a high bank on the north and tenanted by Long-billed Marsh Wrens.—AARON C. BAGG, 72 Fairfield Ave., Holyoke, Mass.

Eastern Glossy Ibis in New Jersey.—On May 1, 1932, the writer, with J. L. Edwards of Montclair, N. J., found an Eastern Glossy Ibis (*Plegadis falcinellus*) on a mud flat on the Metedeconk River near Laureleton, N. J. We recognized the bird promptly by its size (a bit smaller than a Little Blue Heron), by its downcurved bill, by the dark rusty color of head, neck and shoulders, and by the dark cast of the remainder of the upper parts. (More bluish than green from the distance.)

The bird was tame and permitted close approach, near enough to see the body color more distinctly and to note the dark color of bill, legs and feet (all similar in coloration). It flew with neck extended, uttering as it went a rather annoyed squawk.

While feeding on the flat the bird could be recognized as other than a heron, even at a distance too far to see the bill shape, by its manner of searching for food in the mud. It explored and "mouthed over" the mud, sometimes with mandibles partly open, resembling somewhat the feeding habits of certain shore-birds.

I know of no other at all recent definite record for the species from New Jersey.—CHARLES A. URNER, Elizabeth, N. J.

White Ibis near Montgomery, Alabama.—Because of the fact that the only previous records of the occurrence of the White Ibis (*Guara alba*) in Alabama are rather indefinite, and restricted to the extreme coastal strip (A. H. Howell, Birds of Alabama, p. 70, 1924), the following data from the interior of the State are of interest:—

Lieut. J. G. Dreyspring, U. S. M. C., now located at Pensacola, Fla. who became well acquainted with the White Ibis in Nicaragua, told Mr. F. M. Weston, that he had seen Ibises in Alabama on at least two occasions for which he cited approximate dates. A flock of about twenty was seen at Waugh, a short distance east of Montgomery, some time in June, 1927; and two were seen about fifteen miles south of Montgomery in September, 1931. All these birds were adults in white plumage.—HELEN M. EDWARDS, Fairhope, Alabama.

Trumpeter Swan in New Mexico.—Dr. W. A. Archer, Mesilla Park, N. M., sends me a note of information concerning the Trumpeter Swan.

A hunter, Raymond Smoot, while out near the Rio Grande River, about five miles south of Mesilla Park, N. M., saw a flock of five birds flying over him. Thinking they were geese he fired at them and brought one down. Realizing his mistake, he then brought the specimen to Dr. Archer and his brother, A. E. Archer. They identified it as the Trumpeter Swan. Mr. A. E. Archer made a skin of the specimen and gave it to the A. and M. College, at State College, N. M. The bird was taken in November, 1931.

During my nearly eight years in that region I never chanced to see a Trumpeter. In fact, my only sight of a swan was on the Gila River where I saw two but I did not identify the species.—D. E. MERRILL, *Rogers, Arkansas*.

Barnacle Goose in Ohio.—On November 5, 1925, Mr. Chester K. Brooks of Cleveland, Ohio, shot a fine plumaged male Barnacle Goose (*Branta leucopsis*) on the marshes of the Winous Point Shooting Club near Port Clinton, Ohio, at the head of Sandusky Bay. This bird was presented to the Cleveland Museum of Natural History by Mr. Brooks, and is now preserved in the collection of that institution.

While it is possible that this bird may have escaped from confinement, the condition of the plumage gives no hint of this and the record is probably in the same category as the other North American occurrences of the species outside of Greenland. However, an attempt has been made to discredit, as far as possible, the belief that this specimen had escaped from captivity. The writer has corresponded with the directors of the leading zoological parks of the north central states but no records of escaped Barnacle Geese were forthcoming. Furthermore, the fact that the Cleveland Museum specimen was accompanied by another of the same species at the time Mr. Brooks shot it makes the chances of its being an escaped bird much less.

From the published records this Ohio bird seems to be the farthest west record for North America, which makes additionally desirable the publication of the occurrence.—JOHN W. ALDRICH, *Cleveland Museum of Natural History, Cleveland, Ohio*.

European Teal (*Nettion crecca*) in northern New Jersey.—On February 27, 1932, Raymond F. Haulenbeek and Alexander Cairns of Newark visited the Jersey City Reservoir near Boonton, N. J., to observe the ducks which congregate there during migration periods. Searching the water with 18 power glasses, they discovered a teal close to shore which resembled a drake Green-winged teal except that it lacked the crescent mark before the wing and had a long white line on the side. This bird was apparently a drake European Teal.

On April 3 this bird or another of the same kind was seen again. On this date Warren F. Eaton, Julius M. Johnson and the writer found one

drake teal, at Troy Meadows with a flock of about thirty Green-winged Teal, which showed a white stripe on the side and lacked the light crescent bar in front of the wing. The bird was in sight only a short time before the whole flock became alarmed and flew off. On April 16 I again found a European Teal and was able to watch it for over an hour. On this occasion, after considerable time spent in stalking, the bird was seen at a distance of less than fifty yards with 8x glasses. It was with a flock of about twenty-five Green-winged Teal and direct comparison with drakes of this species was possible. The white scapular stripe was rather conspicuous and easily seen in fair light. The absence of the white mark in front of the wing was easily observed whenever the bird turned sideways. This individual was more active than its associates which spent most of the time resting on grassy islands while the European Teal swam around almost continuously often going back and forth several times over the same ten or fifteen foot stretch of open water. In flight I could not distinguish it from the others.

On April 30 I saw the bird again at short range and in good light. This time it was accompanied by a drake Green-winged Teal, two female teal presumably Green-winged, and a drake European Widgeon.—JAMES L. EDWARDS, *Montclair, N. J.*

A Pintail Winters in Montana.—A male American Pintail (*Dafila acuta tzitzihoo*) spent at least the latter part of the winter of 1931-32 near Fortine, in the extreme northwestern corner of Montana. It was observed by the writer frequently during late January, February, and March at a spring-fed old river channel where Mallards and Green-winged Teal winter regularly.

So far as the writer is aware, the only previous published record of the occurrence of this species in Montana during winter was obtained at Choteau, December 27, 1912 (Saunders, *Condor*, xvi, p. 128).—WINTON WEYDEMEYER, *Fortine, Montana*.

Number of Feathers on a Duck.—I recently counted 11,903 feathers (exclusive of down) on an adult female mallard. This information, though meagre, is offered as an addition to the totals given by McGregor (*Condor*, v. 5, p. 17, 1903) of 1889 feathers on a skin of *Ammodramus sandwichensis* and 6544 on one of *Larus glaucescens*.—PHOEBE KNAPPEN, *Washington, D. C.*

Shoveller Nesting near Chicago.—On June 4, 1932, I found a nest of the Shoveller duck at McGinnes Slough, near Orland, in the Cook County (Illinois) forest preserves. The adult birds had been seen repeatedly at this place throughout the latter part of May and, as they were always found in the same small bay, it was suspected that they were nesting. Search was made for the nest on several dates, but it was not until June 4 that it was finally located, in thick grass on a dry hillside about 150 yards from the water. The nest contained nine eggs, which

hatched presumably on June 5, as the young birds were gone when I visited the nest on the morning of June 6.

The Shoveller is a fairly common migrant here and is occasionally seen during June, but I do not know of any other recent breeding records for Cook County, Illinois. At McGinnes Slough, where this nest was found, the Blue-winged Teal, Coot and Florida Gallinule breed in considerable numbers.—C. BLAIR COURSEN, 761 East 69th Place, Chicago, Illinois.

The Color of the Iris in the American Merganser and Holboell's Grebe.—In all descriptions and illustrations of the American Merganser, (*Mergus americanus*) the iris is given as red or carmine. In fifty years acquaintance with the species I have never seen either a male or female with any trace of red in the eye.

In the adult male the iris is very dark brown sometimes with an outer ring of dull yellow which is concealed by the eyelid in life, the eye at a little distance appearing black.

In the adult female the iris is sometimes similar to the male at others with an outer ring of paler brown, more reddish, and usually with the concealed outer ring of yellow.

Young birds of both sexes after the downy stage have eyes that are mostly yellow with hazel brown around the pupil.

I am publishing this note just now as in the recent 'Birds of Minnesota.' I am credited with an illustration showing both sexes with scarlet eyes, in my original painting the irides were colored as in the above descriptions.

Does this Merganser ever have red eyes or is this color a mistaken idea following the actual color of the Old World species, *Mergus castor*? In my opinion the two birds are not conspecific.

In Holboell's Grebe an exactly similar error persists, in this case I am absolutely certain that no grebe of this species ever had red eyes in any plumage unless a shot-damaged eye suffused with blood might have been taken for a red-colored one.

In Forbush's 'Birds of Massachusetts' the illustration shows the winter plumaged bird with eyes and bill of the correct color evidently drawn by Fuertes from life; but his figure of the summer plumaged adult is wrong in the color of the iris and shape and color of the bill.

The bird reaches its maximum of abundance in British Columbia, is seldom out of sight of the windows of my home here, and within a few miles hundreds of pairs breed.

The iris in the adults of both sexes is dark brown usually with an outer concealed ring of yellowish or gold, the brown sometimes speckled with gold.

In young birds and those in their second year the iris is largely yellow, usually brown around the pupil. The eyelid is always yellow.

Why this grebe alone among the grebes is supposed to have a brown iris in the winter and red in summer it is difficult to understand. No other grebe shows any change in eye color with the seasons.

The red eye is given as a diagnostic character by most authorities, E. W. Nelson alone giving the eye as yellow, Ralph Hoffmann in 'Birds of the Pacific States' correctly describes the change in the bill color which shows more black than yellow in the breeding plumage and also acquires a decurved upper mandible as the tip is no longer worn away against rocks as it is when feeding in the winter.—ALLAN BROOKS, *Okanagan Landing, B. C.*

Paired Ovaries in Hawks.—Between November 5, 1931 and April 23, 1932, I examined carefully the ovaries of twenty-five female hawks killed in Pennsylvania and sent to the Pennsylvania State Game Commission. Those with paired ovaries were: Goshawk (10), Sharp-shinned Hawk (1), Cooper's Hawk (1), Red-tailed Hawk (2), Red-shouldered Hawk (1), American Rough-legged Hawk (1), and Marsh Hawk (1). The right and left ovary in each case were equally developed except for one Goshawk, one Red-tailed Hawk, the Red-shouldered Hawk and the American Rough-legged Hawk where the right ovary was less than half the size of the left. Specimens in which the ovaries were not paired were Red-tailed Hawk (1), Red-shouldered Hawk (4), Marsh Hawk (1), and Duck Hawk (2). Goshawks collected in February had enlarged follicles on both ovaries.—MERRILL WOOD, *Harrisburg, Pa.*

A New Hawk for the Louisiana List.—The Western Red-tailed Hawk (*Buteo borealis calurus*), which, so far as can be determined has not previously been recorded from Louisiana, can now be definitely added to the list of the state's avifauna on the basis of specimens collected at Ruston, in Lincoln Parish, on December 23, 1931, and January 24, 1932. The subspecific identification of each was checked by the Biological Survey of the Department of Agriculture.—GEORGE H. LOWERY, *Louisiana Polytechnic Institute, Ruston, Louisiana.*

Bathing Behavior of the Osprey.—From my house on the Patuxent River, Maryland, I have often, with a powerful telescope, watched the Osprey bathing on a sandy point about a half a mile away. The bird stands in about six inches of water, and bathes in the same manner as other birds, by ducking himself under and then vigorously flapping his wings. On May 15, 1932, however, I witnessed what appeared to be a new method of bathing. When I observed the bird this time (through a 16x binocular) it was flying towards me, about six feet above the surface. It was observed suddenly to descend into the water, and then adopt a sort of vertical American-eagle attitude while flapping its wings two or three times before rising again. It then again flew along the water, keeping the same general direction, and repeated this form of immersion some five times, finally rising to a normal flight. I was as positive as I could be that the bird was not carrying anything in its talons. In fact, it had only just left the sandy point. The possibility, therefore, that it was dipping its prey in order, for instance, to secure a firmer hold, is discounted not

only by this fact, but also by the more than erect usually attitude that it took while in the water. I therefore assume that the object of the immersions had something to do with the arrangement of its plumage. Another consideration is that if there had been any prey in its talons, its line of flight, i. e., to the nest, would have been, normally, quite a different one.—L. McCORMICK-GOODHART, *Washington, D. C.*

Ospreys Bathing.—On August 22, 1927, I saw two Ospreys, birds of the year, flying over a fresh water lake at Cape May Point, N. J., and repeatedly diving down head foremost, then turning and entering the water at a low angle, submerging the head and shoulders and often remaining on the surface with wings outspread for a half minute or more at a time. The birds would then flap heavily out and shaking themselves in the air would plunge in again. Each bird dove fifteen or twenty times sometimes in quick succession and made no attempt to catch anything, if indeed there was anything there to catch, for I had not seen them fishing there at any time during the summer. They were evidently bathing, possibly to rid themselves of vermin acquired in the nest.

In connection with the preceding note it seems desirable to put this observation on record.—WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

Mock Courtship Display by Female Ring-necked Pheasants.—At Peterboro, New Hampshire, during the winter of 1931–32, Mrs. Whittle and I had daily opportunities to observe a group of Ring-necked Pheasants consisting of two males and six females, which came several times a day to our garden some fifty feet from the house, where a continuous food supply was maintained.

Throughout March and early April the behaviour of the two males changed little, excepting that their habit of distending their feathers and shaking them increased, a habit less often practised by the females.

It was not until mid-April that the males were seen to manifest any courtship interest in the females, but prior to this, during the first week in April, the behaviour of the females themselves was distinctly of a kind which in male pheasants would be called courtship display, though Townsend's account of the male's display (*Bent, Life Histories of the Galliformes and Columbiformes*), makes no mention of any display indulged in by females. This display usually took place with no males in sight and if a male were present, he appeared oblivious to the performances.

The earliest exhibition observed consisted of sudden runs for eight or ten feet from a place where the females were in a group, and an immediate return to the same place. A day or two later a female was observed with wings partially spread, her body feathers fluffed out and the tail fanned and bent forward beyond the vertical, turning around or waltzing in a circle of a diameter about equal to her length. Following this a sudden short run took place. The last performance seen of this sort was equally

elaborate, and the display just described was accompanied by walking rapidly in circles of five or six feet in diameter instead of waltzing. Later in the season the habit of suddenly darting a short distance was observed to take place when an amorous male sought a female's favor. This appeared to be play on her part for she dodged back and forth on one side of a small clump of bushes while the male repeated the performance on the opposite side.

It is a little difficult to understand the cause of these sudden runs and displays, but as they became most elaborate when the nesting season was at hand, it appears probable that they took place at the period of maximum ovarian development. If the character of the display agreed with the observed courting performances of the males, it would seem to indicate that the females inherited the male's instinct to display but not the male's purpose in so doing, namely, to win a mate. Perhaps all the ways of courting males have not been observed. The display was not directed towards or before any one bird, and usually only a single bird at a time displayed elaborately, though when this was taking place other females present became excited and the sudden to-and-fro runs usually became general. Display exhibitions were of short duration, lasting not over one or two minutes.—CHARLES L. WHITTLE, *Peterboro, N. H.*

Florida Gallinule Breeding in the Connecticut Valley.—The Florida Gallinule is principally a fall migrant in the Valley from southern Massachusetts southward and the individuals are mostly young of the year. On May 12, 1929, however, a spring migrant was found dead on the river-bank near Holyoke and in 1930, breeding birds were first noted by C. W. Vibert at South Windsor, Conn. They seem to have increased in 1931 and 1932, and this year, a colony of three or four pairs was discovered at a pond in Belchertown, Mass., some eight or nine miles east of the river. This pond is also the only place where this year we have found the Sora and Pied-billed Grebe nesting. It is full of patches of dense, tall cat-tails separated by leads of deep water,—the Gallinule's favorite type of habitat.—S. A. ELIOT, JR., *Northampton* and A. C. BAGG, *Holyoke, Mass.*

American Golden Plover (*Pluvialis dominica dominica*) in Camden County, N. J.—John A. Gillespie, Norman J. McDonald and the writer observed an American Golden Plover at Fish House, Camden County, N. J., August 29, 1932. The bird (an adult male) was under observation for half an hour, during which time the characteristic field marks were plainly made out. This is the first Camden County record for this species so far as I know.—JULIAN K. POTTER, *Collingswood, N. J.*

Wilson's Plover Seen in Massachusetts.—On May 15, on the eastern beach of the "neck" that runs out from Lynn to Nahant, a flock of Semipalmated Plovers was being observed by a rather large party of Essex County bird-men, with whom I was a guest. I noticed among the birds one that was different having a long black bill and more white on

the forehead than the rest. It was later seen again by Ludlow Griscom and S. G. Emilio and identified as Wilson's Plover. It kept by itself a little apart from the Ring-necks, and had noticeably paler upper-parts and a breast-band of the same color—betokening, I suppose, a female.

This is said to be the fourth record for Massachusetts, the second for Essex County.—S. A. ELIOT, JR., *Smith College, Northampton, Mass.*

Vitality of Plover Embryo.—The unusually high tide of June 16, 1932, partially swept away the eggs of a colony of Royal Terns, Least Terns and Black Skimmers on Deveau's Bank, near Seabrook's Island, S. C. On the afternoon of the 17th many of the eggs were found washed up on the beach of Seabrook's Island. A few of each kind were collected, among them being one egg of the Wilson's Plover, and packed in cotton in a tin box. The next day they were carried by automobile to Charleston, a distance of about thirty-six miles and when they were blown, on the afternoon of the 20th, the egg of the Wilson's Plover, after being out of the nest for at least three days and probably longer, was found to contain a large embryo which was still alive. Two days later, on the 20th, they were taken to the Charleston Museum, where their identification was confirmed by Mr. E. Burnham Chamberlain.

Although the Plover egg was found among the sedge and debris of the high water mark, there is a possibility, though not a probability, of its having been by some means transported from the breeding area of the Plovers on Seabrook's Island, about a quarter of a mile from the spot where the egg was found.

The temperature for the dates mentioned ranged from 68 (minimum) to 89 (maximum).—WILLIAM W. HUMPHREYS, *15 Limehouse Street, Charleston, S. C.*

Northern New England Woodcock.—In the vicinity of Farmington, Franklin Co., Maine, a party of three or four sportsmen, headed by the late Richard C. Storey of Boston, hunted Woodcock for thirty years. Through the courtesy of Mrs. Storey I was able to study the records of these annual shooting parties. They extended through the best part of the October flight and averaged about fifteen days of shooting each autumn.

The records are a model for this kind of upland shooting. In nearly all cases each individual "cover" is mentioned by name and the number of birds started and shot in it are recorded every day. Thus it is easy to total the number of birds started and shot each year, and the length of time in days of each annual hunt.

There has been a great difference of opinion on the status of the Woodcock and as in all cases of the sort, loose statements based on casual observations have been given more credit than they deserve. A generation ago it was held by some competent naturalists that the Woodcock was a doomed species. Even now, when for at least twenty-five years we in New England have noted a rather steady advance in numbers, the story is

far from complete, and much more must be learned about its habits, migration and periods of scarcity. It seems fair to say that the range of the species in the Middle West, where it was never very plentiful, has been greatly curtailed through drainage, improved farming and over-shooting. On the other hand, there may have been an extension of range in the East due to extensive lumbering of coniferous growth, burning, and abandonment of farms in the New England States. However, in eastern Quebec, land is still being cleared and rough "stump farming" is extending up to the very border of northwestern Maine. It is quite likely that the Woodcock is still extending its range in a northerly and easterly direction in the St. Lawrence Valley.

In order to evaluate the Farmington figures more easily from the standpoint of increase or decrease, I have divided the records into three nearly equal periods, or decades. The first period is from 1901-1912 (ten years) with the records of 1910 and 1911 missing. The second period is for the ten years from 1913-1922 inclusive and the last period is for the nine years, 1923-1931.

The following figures seem to be the most significant; the average number of birds started each day for each period, the number of birds started per trip, per period based on a trip of fifteen days, and the number of birds shot per fifteen day period for each decade. It will be seen that this last figure does not increase as fast from the early to the late period as the figure for "birds started." This is probably due to more leisurely hunting methods with advancing years, and also to the lower federal and state bag limit.

| | 1901-1912 (2 years missing) | 1913-1922 | 1923-1931 (9 years only) |
|--|-----------------------------------|-----------|--------------------------------|
| Average number of birds started per day per decade..... | 9.2 | 11.2 | 17. |
| Average number of birds started per year per decade..... | 139.2 | 171.5 | 310. |
| Average number of birds started per fifteen day trip for each decade.... | 138.3 | 169.5 | 255. |
| Average number of birds killed per fifteen day trip for each decade.... | 84.2 | 100.5 | 108.5 |

It will be noted that the figure 310, the actual average number of birds started per year for the last period is much larger than the figure 255 representing the theoretical number for a fifteen day trip. This is because during the last period the hunting trips were longer, averaging over eighteen days actual hunting each autumn.

To sum up, there would seem to be no tendency to a decreasing supply of birds in the Farmington region and even allowing for greater knowledge of hunting territory, better roads and better motor cars there can be little doubt of some actual increase in this part of northern New England in the past thirty years.—JOHN C. PHILLIPS, *Wenham, Mass.*

The Western Willet in Wisconsin.—In Kumlien and Hollister's 'Check-List of Wisconsin Birds,' the Willet (*Catoptropterus semipalmatus*) is listed as the species occurring within the borders of Wisconsin as a rare summer resident, with the suggestion that possibly in the examination of a good series of skins, some specimens of the Western Willet might be discovered. There is apparently no good series of these skins.

In 1925, Taylor reported in 'The Auk' (Vol. 43, p. 251) seeing a Western Willet and attempting to collect it but the first actual record of the race is one which the writer collected on April 30, 1932, near the mouth of Bar Creek, Sheboygan County, along the Wisconsin Shore of Lake Michigan. In speaking to some fishermen, I was told of several very large sandpipers seen on the beach that morning and upon going there I saw two fine specimens of willet, leisurely feeding along the shore. The birds were quite tame, and allowed rather close approach. The larger one was collected, and upon examination proved to be a female Western Willet. The skin is now in the collection of the Milwaukee Public Museum.—CLARENCE S. JUNG, 2502 E. Stratford St., Milwaukee, Wis.

Marbled Godwit near Montreal.—On May 15, 1932, I observed a Marbled Godwit (*Limosa fedoa*) on the south shore of the River St. Lawrence near Laprairie, about four miles from Montreal. It was fairly tame and allowed me to approach within about fifty feet, at which distance every detail of the plumage was plain through a pair of Zeiss 8 x 40 binoculars. I made a full description of the bird, although the long slightly upturned bill, the curlew-like build, the barred tail and the striking rufous-buff coloring are sufficient identification.

Whilst under observation the bird was standing on the river shore, and from time to time snapped its beak open and shut. The movement was so quick that at first it was difficult to follow, but it soon became clear that the upper mandible was flexible, like that of the Woodcock and some other shore-birds. When the beak opened the normal upward curve of the upper mandible was accentuated until the tip pointed for an instant vertically upwards, though the base was still almost horizontal. The bending took place in the distal inch and a half of the beak. This observation, of which I have been unable to find any mention in descriptions of either American or European species of godwits, was confirmed by my brother who was with me. The bird watched us intently all the time, so that the movement may have been an expression of alarm. It was quite silent, and remained on the same stretch of river shore until evening.

There is one previous record for the district, mentioned by Wintle without date, except that the bird was taken in autumn (Birds of Montreal, 1896, p. 42).—V. C. WYNNE-EDWARDS, McGill University, Montreal.

Concerning the Occurrence of the European Ruff in N. A.—Since 1914 there has been no published record of the European Ruff (*Philomachus pugnax*), for North America.

On October 1, 1929, an immature male was taken by me near Wolfville, Nova Scotia, and subsequently identified by Dr. H. C. Oberholser, this being the second record for Nova Scotia. It was in company with a Greater Yellow-legs at the edge of a small tidal pond on the salt marsh. The two birds were standing motionless about a foot apart and allowed me to approach within easy gunshot. When skinned the Ruff was found to be in good condition, although it was not fat. The specimen is now mounted and in the Provincial Museum at Halifax, Nova Scotia, accession number 7178.

Prior to 1929 there had been thirty records regarded as authentic, omitting the five or six hypothetical records for Michigan (G. A. Stockwell, *Forest and Stream*, VIII, 22, 36) but including the three Greenland Birds (Brent, *Life Histories of N. A. Shorebirds*, p. 49), and the occurrences off South America.

In the 'Catalogue of Birds, Nests and Eggs of the Museum of Greene Smith, Peterboro, N. Y.,' which was printed in 1880, and which is now in the possession of the Laboratory of Ornithology of Cornell University, there are two references to the Ruff on Long Island, N. Y. His collection appears to have contained eight Ruffs and all are dated 1887. For six the locality given is England and for the other two, Long Island. Undoubtedly six of these birds were imported and purchased but it is not logical to suppose that he would have given the locality England for these and Long Island for the other two if he believed all of them to have come from the same place by human agencies. Of Greene Smith's Long Island records the serial number of the male is 667 and that of the female 706. It is my opinion that both are authentic and should they be accepted the total number of American records is thirty-three.

A study of these records shows that no Ruffs have been taken in June nor during the colder months of December, January, February and March. There have been adult and juvenile records for both spring (April and May) and fall. There is a large majority of juvenile fall records. The records fall into two groups, those along the Atlantic coast and those towards the Great Lakes region (Ohio, Michigan and Ontario) corresponding to two general lines of native shorebird flight.

There is a period of fifteen years between the last two records and a breeding ground on this continent is improbable. Were it so there would, to my way of thinking, have been more frequent records of the bird's capture.

In 'The Auk' for 1905, p. 411, Mr. Ruthven Deane published a list of sixteen American records of the Ruff and in 1906 Dr. T. S. Palmer added six more (*Ibid.*, 1906, p. 99). Since that time the following have been added:

Ad. ♀ Seabrook, N. H., Sept. 23, 1907. Coll. John E. Thayer (*Auk*, XXXVI, 1909, p. 77).

Im. ♀ Pt. Judith, R. I., Sept. 7, 1909. Coll. Harry S. Hathaway (*Auk*, XXX, 1913, p. 18).

Im. ♀ Pribilof Isls., Alaska, Sept. 7, 1910. Coll. U. S. Nat. Mus., (Evermann, Auk, XXX, 1913, p. 18).

♀ Scarborough, Me., Oct. 16, 1912. Coll. Arthur H. Norton (Auk, XXX, 1913, p. 576).

Im. ♂ Long Island, N. Y., Sept. 26, 1914. Coll. Amer. Mus. Nat. Hist. (Miller, Auk, XXXII, 1915, p. 226).

Im. ♂ Wolfville, N. S., Oct. 1, 1929. Coll. Prov. Mus., Nova Scotia.

♂ Long Island, N. Y. Formerly in Greene Smith Mus. Peterboro, N. Y.

♀ Long Island, N. Y. Formerly in Greene Smith Mus. Peterboro, N. Y.

—VICTOR E. GOULD, Cornell University, Ithaca, N. Y.

The Shore-bird Flight of 1931 on the New Jersey Coast.—The following compilation of 1931 shore-bird records from the coastal regions of New Jersey represents counts made by the writer, by several other members of Linnaean Society of New York and by members of Delaware Valley Ornithological Club, the latter records being collected by Julian K. Potter.

There were 133 locality trips during the southbound migration, covering about the same areas as those of the three preceding years.¹ They were apportioned as follows: Newark Meadows 32; Point Pleasant 6; Seaside Park 8; Barnegat Inlet 13; Barnegat Marshes (west of bay) 13; Beach Haven Inlet 18; Tuckerton Marshes 8; Grassy Bay 1; Brigantine and Absecon Marshes 21; Coast between Atlantic City and Cape May 5; Cape May and vicinity 8. The distribution of trips by months was: July 34; August 48; September 22; October 10; November 9; December 8; January 2.

A total of 34 species was recorded of which 33 were seen on the southerly and 20 on the northerly flight. These species are ranked in Tables I and II as in previous years,¹ by taking an average of (1) their ranking according to number of times seen, (2) their ranking according to largest number seen in one day and (3) their ranking according to total numbers seen on all trips.

The 1931 summer was almost as dry as that of 1930 and this, coupled with airplane activities at Newark Airport, reduced the numbers of birds stopping on Newark Meadows. But elsewhere conditions were favorable.

There were several shifts in position in the spring table, the most notable increases being Dowitcher and Knot. The Dowitcher has made a very marked increase during the past four years. The five species which led in 1929 and 1930 were still leading in 1931, though there were several changes in order of abundance.

Extreme dates and peak movements of the principal species on the fall flight follow:

Charadrius melodus. Piping Plover.—Present to Oct. 4; maximum July 29; majority July 11 to 29; largest movement July 19 to 29.

Charadrius semipalmatus. Semipalmated Plover.—July 7 to Oct. 29;

¹ Auk, 1929, p. 314; 1930 p. 424; 1931, p. 418.

TABLE I. RANKING OF SHORE-BIRDS ON NEW JERSEY COAST AND
SALT MARSHES IN 1931—FALL FLIGHT.

[Figures in () following names indicate ranking during three previous years.]

| | Rank 1931 | Times seen | Largest no. in 1 day | Total no. all trips |
|--|--------------|---------------|----------------------------|---------------------------|
| Semipalmated Sandpiper (1) (1) (1).... | 1 | 81 | 1,400 | 16,931 |
| Dowitcher (7) (4) (5)..... | 2 | 56 | 815 | 5,500 |
| Sanderling (2) (5) (4)..... | 3 | 49 | 1,100 | 5,491 |
| Semipalmated Plover (4) (2) (2)..... | 4 | 62 | 200 | 2,716 |
| Lesser Yellow-legs (3) (3) (3)..... | 5 | 63 | 175 | 2,714 |
| Least Sandpiper (5) (7) (9)..... | 6 | 57 | 300 | 1,649 |
| Hudsonian Curlew (11) (6) (8)..... | 7 | 29 | 450 | 2,349 |
| Knot (13) (10) (10)..... | 8 | 24 | 525 | 2,073 |
| Killdeer (9) (8) (7)..... | 9 | 71 | 48 | 603 |
| Pectoral Sandpiper (14) (16) (12)..... | 10 | 39 | 200 | 715 |
| Greater Yellow-legs (8) (9) (16)..... | 11 | 45 | 85 | 463 |
| Red-backed Sandpiper (10) (11) (15)... | 12 | 8 | 500 | 772 |
| Spotted Sandpiper (15) (15) (11)..... | 13 | 52 | 35 | 537 |
| Black-bellied Plover (6) (14) (6)..... | 14 | 42 | 40 | 336 |
| Ruddy Turnstone (12) (12) (14)..... | 15 | 19 | 100 | 436 |
| Western Sandpiper (23) (17) (19)..... | 16 | 26 | 66 | 308 |
| Piping Plover (18) (18) (17)..... | 17 | 25 | 23 | 181 |
| Stilt Sandpiper (22) (22) (18)..... | 18 | 10 | 35 | 74 |
| Upland Plover (20) (21) (20)..... | 19 | 15 | 17 | 84 |
| White-rumped Sandpiper (19) (13) (21)... | 20 | 9 | 25 | 69 |
| Golden Plover (16) (20) (13)..... | 21 | 12 | 11 | 38 |
| Willet (17) (19) (23)..... | 22 | 6 | 5 | 13 |
| Wilson's Snipe (24) (27) (22)..... | 23 | 3 | 14 | 16 |
| Solitary Sandpiper (30) (26) (24)..... | 24 | 5 | 2 | 7 |
| Woodcock * * (26)..... | 25 | 4 | 2 | 5 |
| Purple Sandpiper (25) (23) *..... | 26 | 1 | 2 | 2 |
| Northern Phalarope (21) (28) *..... | 27 | 1 | 1 | 1 |
| Baird's Sandpiper (29) (24) *..... | 28 | 1 | 1 | 1 |
| Marbled Godwit (26) (25) *..... | 29 | 1 | 1 | 1 |
| Hudsonian Godwit (28) * *..... | 30 | 1 | 1 | 1 |
| Long-billed Dowitcher * * *..... | 31 | 1 | 1 | 1 |
| Buff-breasted Sandpiper (27) * *..... | 32 | 1 | 1 | 1 |
| Wilson's Phalarope * * (25)..... | 33 | 1 | 1 | 1 |

* Not recorded in the years so indicated. The last seven species tie for 27th to 33rd place.

maximum Aug. 2; majority July 29 to Aug. 30; largest movement Aug. 6 to 30.

Oxyechus vociferus vociferus. Killdeer.—Through winter; maximum (winter concentration) Dec. 27; migration maximum Aug. 30; no pronounced peak.

Pluvialis dominica dominica. American Golden Plover.—Aug. 27 to Oct. 3; maximum Sept. 19; majority Sept. 19–21.

Squatarola squatarola. Black-bellied Plover.—July 18 to Nov. 15; maximum Sept. 13; majority Aug. 21 to Sept. 13; no pronounced peak.

Arenaria interpres morinella. Ruddy Turnstone.—Aug. 1 to Sept. 20; maximum Aug. 9; majority Aug. 9 to 22.

Capella delicata. Wilson's Snipe.—Unusual numbers present up to latter half of January.

Phaeopus hudsonicus. Hudsonian Curlew.—July 11 to Sept. 20; maximum July 11; majority July 9 to Aug. 2; largest movement July 9–13.

Bartramia longicauda. Upland Plover.—July 19 to Aug. 29; maximum Aug. 13; majority Aug. 6 to 29.

Actitis macularia. Spotted Sandpiper.—To Sept. 20; maximum Aug. 20; majority July 15 to Aug. 20; no pronounced peak.

Catoptrophorus semipalmatus (Subsp. ?). Willet.—Aug. 1 to Oct. 4; maximum Aug. 22; majority Aug. 22 to 30.

Totanus melanoleucus. Greater Yellow-legs.—July 3 to Dec. 27; maximum Aug. 16; majority Aug. 13 to Sept. 6.

Totanus flavipes. Lesser Yellow-legs.—July 3 to Sept. 20; maximum July 30; majority July 19 to Aug. 30; no pronounced peak movement; August flight almost as large as July.

Calidris canutus rufus. American Knot.—July 12 to Sept. 13; maximum July 29; majority July 26 to Aug. 11; peak movement July 29.

Pisobia melanotos. Pectoral Sandpiper.—July 15 to Sept. 27; maximum July 28; majority July 28 to Aug. 30.

Pisobia fuscicollis. White-rumped Sandpiper.—July 5 to Sept. 13; maximum Aug. 30; majority Aug. 30 to Sept. 13.

Pisobia bairdi. Baird's Sandpiper.—Aug. 16.

Pisobia minutilla. Least Sandpiper.—July 3 to Oct. 4; maximum July 5; majority July 5 to Aug. 22; largest movement July 5 to 19 but fair wave in August, up to 22nd.

Pelidna alpina sakhalina. Red-backed Sandpiper.—July 18 to Dec. 27; maximum Dec. 27, the late date probably due to mildness of winter; majority Oct. 4 to Dec. 27.

Limnodromus griseus griseus. Eastern Dowitcher.—July 3 to Sept. 20; maximum July 11; majority July 11 to Aug. 8; July wave much larger than early August wave.

Limnodromus griseus scolopaceus. Long-billed Dowitcher.—A large, dark, very long-billed bird with tinted breast and belly seen at Brigantine Sept. 6 with other Dowitchers was probably this subspecies. One seen Sept. 7 at Barnegat Inlet I described as follows in my notes: "Very long

bill; size large; rather dark bird; tint on breast and belly quite uniform; upper breast rather heavily marked; under tail buffy and heavily barred."

Micropalama himantopus. Stilt Sandpiper.—July 9 to Sept. 27; maximum Aug. 30; majority Aug. 8 to 30.

Ereunetes pusillus. Semipalmated Sandpiper.—July 7 to Oct. 4; maximum Aug. 2; majority July 19 to Aug. 31; largest movement July 25 to Aug. 9.

Ereunetes maurii. Western Sandpiper.—July 12 to Oct. 4; maximum Aug. 30; majority July 29 to Sept. 20; largest movement Aug. 30 to Sept. 13.

Tryngites subruficollis. Buff-breasted Sandpiper.—Newark Meadows, Sept. 6 (Kasoy and Herbert).

Crocethia alba. Sanderling.—July 11 to Jan. 17; maximum July 25; majority July 25 to Aug. 23; largest movement July 25 to Aug. 1.

Steganopus tricolor. Wilson's Phalarope.—Secaucus, Sept. 13 (Edwards, Herbert and others).

TABLE II. RANKING OF SHORE-BIRDS ON NEW JERSEY COAST AND SALT MARSHES IN 1931—SPRING FLIGHT.

[Figures in () directly following name indicate rank in 1929 and 1930].

| | Rank 1931 | Times seen | Largest no. in 1 day | Total no. all trips |
|---------------------------------------|--------------|---------------|----------------------------|---------------------------|
| Semipalmated Sandpiper (1) (1) | 1 | 11 | 2,000 | 4,120 |
| Ruddy Turnstone (5) (8) | 2 | 6 | 2,500 | 4,761 |
| Black-bellied Plover (7) (4) | 3 | 9 | 800 | 1,573 |
| Semipalmated Plover (6) (2) | 4 | 8 | 1,500 | 2,430 |
| Greater Yellow-legs (3) (3) | 5 | 20 | 75 | 441 |
| Sanderling (12) (12) | 6 | 8 | 300 | 606 |
| Least Sandpiper (9) (5) | 7 | 8 | 250 | 449 |
| Dowitcher (2) (6) | 8 | 8 | 100 | 352 |
| Hudsonian Curlew (15) (14) | 9 | 4 | 400 | 438 |
| Spotted Sandpiper (13) (10) | 10 | 10 | 10 | 36 |
| American Knot (7) (13) | 11 | 5 | 150 | 245 |
| Piping Plover (16) (15) | 12 | 8 | 20 | 42 |
| Killdeer (10) (9) | 13 | 10 | 10 | 32 |
| Red-backed Sandpiper (4) (11) | 14 | 5 | 15 | 43 |
| Northern Phalarope * * | 15 | 2 | 7 | 8 |
| White-rumped Sandpiper (11) (17) | 16 | 2 | 6 | 9 |
| Woodcock * (16) | 17 | 3 | 2 | 5 |
| Western Sandpiper (17) * | 18 | 1 | 6 | 6 |
| Willet * * | 19 | 1 | 1 | 1 |
| Red Phalarope * * | 20 | 1 | 1 | 1 |

* Not recorded in the years indicated.

The spring records in Table II are based on 24 trips, 4 in March, 5 in April and 15 in May. They caught the principal flight of Black-bellied Plover, Turnstones, Curlew and the smaller species.

The records of the past four years can be grouped as follows:

Small size—Northern Phalarope, White-rumped Sandpiper, Baird's, Least, Semipalmated, Western and Spotted Sandpipers and Piping and Semipalmated Plover.

Medium to medium large size—Red Phalarope, Wilson's Phalarope, Woodcock, Wilson's Snipe, Dowitchers, Stilt Sandpiper, Knot, Purple Sandpiper, Pectoral Sandpiper, Red-backed Sandpiper, Sanderling, Buff-breasted Sandpiper, Lesser Yellow-legs, Solitary Sandpiper, Upland Plover, Golden Plover, Ruddy Turnstone, and Killdeer.

Large size—Godwits, Curlew, Greater Yellow-legs, Willet and Black-bellied Plover.

TABLE III. OCCURRENCE OF SHORE-BIRDS BY SIZE GROUPS IN NEW JERSEY DURING FALL FLIGHT.

| | Small | Medium to medium large | Large | Total |
|-----------|--------|---------------------------|-------|--------|
| 1928..... | 35,134 | 12,194 | 3,074 | 50,402 |
| 1929..... | 39,835 | 15,190 | 4,719 | 59,744 |
| 1930..... | 29,207 | 13,946 | 3,300 | 46,453 |
| 1931..... | 22,393 | 18,531 | 3,163 | 44,087 |

Above by Percentages.

| | | | | |
|-----------|------|------|-----|-----|
| 1928..... | 69.7 | 24.2 | 6.1 | 100 |
| 1929..... | 66.7 | 25.4 | 7.9 | 100 |
| 1930..... | 62.9 | 30 | 7.1 | 100 |
| 1931..... | 50.8 | 42 | 7.2 | 100 |

This shows a material improvement in the position of the medium to medium large group in four years, but only a very slight improvement in that of the larger sized shore-birds.—CHARLES A. URNER, *Elizabeth, N. J.*

Northern Phalarope in the Dismal Swamp, Virginia.—While on a trip into the Virginia end of the Dismal Swamp, Dr. William B. McIlwaine, Jr., and the writer found two Northern Phalaropes (*Lobipes lobatus*) on Lake Drummond on May 24, 1932. As they took flight I shot one of them, which turned out to be a female in spring plumage. The other bird stayed within sight for some time, flying about and calling, but we did not ascertain its sex. The bird which I collected was very thin, with no fat at all on the skin. The stomach contained only the remains of a few small and completely digested beetles, although many bees and other insects were floating on the water. The ovaries were only slightly enlarged. This is apparently the third record for Virginia, and the only

spring record. Dr. William C. Rives in his, 'A Catalogue of the Birds of the Virginias,' recorded the occurrence of two at Cobb's Island in the autumn of 1889, one of which was collected; and Dr. E. A. Smyth, Jr., reported ('The Auk,' XLIV, Jan., 1927, p. 45), the capture of one at Hampden-Sydney, Va., Sept. 25, 1920. There are also two Washington records, both in August.—J. J. MURRAY, *Lexington, Virginia*.

Phalaropes in New Jersey in Spring.—J. L. Edwards of Montclair, N. J. and the writer were fortunate in witnessing the great visitation of Red Phalaropes (*Crymophilus fulicarius*) which occurred on the New Jersey shore during a north-east storm on May 12, 1932. The visitation is referred to by W. Stuart Cramer in 'The Auk' of July, 1932. We saw a few birds over the Tuckerton Marshes. In the poor light, fighting a strong wind, the first bird seen looked absolutely black, like a Black Tern with a white stripe in the extended wing. As we crossed Barnegat Bay over the Manahawkin Bridge to Long Beach another individual was seen. Driving south toward Beach Haven we found others in the Bay and one swimming in a puddle at the roadside. Soon we became conscious of the fact that all the shore-birds which were passing over the dunes making slow headway against a heavy wind and rain, were of this species.

When we reached Beach Haven Inlet, a rare sight greeted us. The place fairly teemed with Red Phalaropes. We stood on a small spit of sand, while in a sheltered bit of water, literally right at our feet, a large flock of these striking and agile birds fed over a mass of seaweed and garbage. We collected two and later picked up another dead on the road.

The birds were in every degree of plumage change, about forty per cent being fully colored. A few were still in almost complete winter plumage except that the forehead, white in the winter birds, was dark. The darkening of the forehead is probably one of the first noticeable changes toward the summer attire. A good many birds were fully red but showed little or no definite white area on the side of the head (not even as much as the male bird shows in summer). The white face is thus probably the last feature of the breeding plumage to be acquired. We saw fully 300 birds, and probably more.

Among the flocks riding the waves along the shore we finally picked out one Northern Phalarope (*Lobipes lobatus*) still in winter plumage. The birds were so close that we could note the thinner bill of the Northern and the absence of yellow at the base. The few Red Phalaropes still in winter dress but with the dark foreheads could easily have been mistaken for Northern Phalaropes but for the yellow on the bill, visible only at short distances. Seen alone, without contrast, the bills of the Reds did not seem particularly heavy.

A few days later, on May 18, Ludlow Griscom, J. L. Edwards, Lester L. Walsh and the writer found, on a muddy flat near Troy Meadows, N. J. a beautiful adult female Wilson's Phalarope (*Steganopus tricolor*), an extremely rare spring transient on the Atlantic Coast.

For a "land-lubber" to see all the Phalaropes in New Jersey is quite a rare privilege. To see all three within a week during the spring migration is a consummation too unlikely to seem possible.—CHARLES A. URNER, *Elizabeth, N. J.*

Wilson's Phalarope in New Jersey.—On August 28, 1932, at Brigantine Island, N. J., in a large flight of shore birds I found a single Wilson's Phalarope (*Steganopus tricolor*) running about on a mud flat busy feeding. It presented a comical sight with tail held up at an angle and neck stretched out in front while it held the body in more or less of a crouching position. The species is very unusual on the New Jersey coast.—JULIAN K. POTTER, *Collingswood, N. J.*

Ring-billed Gull (*Larus delawarensis*) on the New Hampshire and Maine Coasts in July.¹—In his 'Birds of Massachusetts and Other New England States,' Forbush says (p. 82) that this gull is "rarely seen in Massachusetts waters before September or early October when young birds appear among flocks of Herring Gulls."

While waiting on the pier in Portsmouth harbor on July 18, 1932, for our boat en route to Duck Island, several Ring-billed Gulls were noted at close range, and watched with binoculars, as they flew about and alighted on the water with *L. argentatus*, in dark plumage, hunting stray scraps of food.

At Hampton Beach on July 17 Mr. J. P. Melzer and I watched a Ring-billed Gull which was in perfect adult plumage, except for a broad deep black subterminal band equal to a quarter the length of the tail itself; probably a bird in its second year.

When, on the 18th, three such birds but with narrower tail bands, rose together with the thousands of *L. argentatus* and the few pairs of *L. marinus* as we neared Duck Island, it seemed convincing that the birds seen earlier were not merely accidentals.

Dean C. F. Jackson, of the Marine Zoological Laboratory on the nearby, Appledore Island, informed me he has seen such birds at Duck Island in other seasons and the bird may yet be found breeding.

Duck Island is the northernmost island in the Isles of Shoals group, and is, incidentally, wholly in Maine, the boundary cutting through the upper half of this group of islands.—LEWIS O. SHELLEY, *East Westmoreland, N. H.*

Caspian Tern (*Sterna caspia imperator*) in Camden County N. J.—On August 20, 1932, John A. Gillespie and the writer were looking over a flock of shore birds on a bar in the Delaware river at Fish House, Camden County, N. J., when a large light-colored bird flew in and settled on the exposed mud. Mr. Gillespie who had his glasses on it recognized it as a Caspian Tern and the unusual size, heavy red bill and comparatively short tail, not reaching the folded wing tips, quickly dispelled any doubt as to the bird's identity. Presently it was joined by another of the same

¹ Published through the Jonathan Dwight Memorial Fund.

species, and after circling about they flew off up the river. Both birds were adults. To the best of the writer's knowledge, this is the only record of the bird in Camden County. Mr. John T. Emlen, Jr., however, recorded it on April 21, 1929, in Burlington County, N. J. (*Auk*, Vol. XLVI, Page 534).—JULIAN K. POTTER, *Collingswood, N. J.*

Fishing Ability of the Black Skimmer (*Rynchops nigra nigra*).—

I have watched Black Skimmers many times "ploughing the main" (fishing?) without ever seeing them catch anything but on August 28, 1932, Henry H. Collins, 3rd, and I were watching one cutting the water in a shallow pool at Tuckerton, N. J., when suddenly it had a fish struggling between its mandibles at a point about one half way between the tip and base of bill. The bird wheeled over a dead sod bank on the edge of the pool and as it did so, the fish freed itself and dropped to the ground. Immediately the Skimmer lit and tried to secure the fish with a straight thrust. The sod did not yield and the bird seemed unable to grasp the fish, though in soft sand or mud the result would probably have been different. It then tried to get the struggling fish by turning its bill sidewise but this also failed and without further delay it flew out over the pool and started again to cut the water in its characteristic manner. Almost at once another fish was caught. This time the victim was forced far up near the base of the bill and the skimmer flew off holding it crosswise.

Mr. Stanley C. Arthur states that he has never seen the skimmer catch a fish while cutting the water with its bill. (*Auk*, XXXVII, p. 566) He also says that during the performance the bill is not held open. From my observations I believe the skimmer's bill is always partly open for the greater part of its length when actually fishing,—an open elongated notch wide at the tip of the bill narrowing to a point at the base. Naturally as the skimmer forces the bill through the water any object such as a fish that is hit by the protruding tip of the lower mandible is forced up into the notch-like opening and caught. This method of fishing appears to be the normal way for the bird to capture its prey and has been previously noticed by Dr. Witmer Stone (*Auk*, XXXVII, p. 595). That it is not witnessed more often is due largely to the fact, no doubt, that a single bird cannot be kept under observation for any great length of time. That it uses other methods of capturing fish is plainly pointed out by Mr. Arthur in the above mentioned article.

As to another possible use of the bird's peculiar bill—I have on several occasions seen skimmers on approaching shallow water to alight, apparently test the depth by the skimming and when the lower mandible struck bottom, they would come to rest. I have never seen an adult Skimmer swimming or floating on the water, but always standing in a position where its feet touch bottom.—JULIAN K. POTTER, *Collingswood, N. J.*

Least Tern on the New Hampshire Coast in July.—On July 3, 1932, while walking along Hampton Beach, N. H., I was surprised to note several Least Terns (*Sterna antillarum*) plunging into the water with the other

terns. The white marking above the bill, and the small size in comparison with the larger species, were distinguishing marks readily noted. The Least Tern was also found at Seabrook Beach, on July 4. While the Common Tern and a few pairs of Roseate Terns nest at Seabrook Beach, it is doubtful if the Least does so.

Heading out of Portsmouth Harbor on the 3rd four Least Terns passed us in the outer harbor, flying out toward a small island where, a New Hampshire Coast Guard Station is located. Three were likewise seen to pass our boat on a similar trip on July 18. I was told by one of the men on the Coast Guard boat that "the little Tern with the white crescent over the bill, nests on the Island where the Station is," and other mariners told me the same. I did not, however, have occasion to visit the island and substantiate the report.—LEWIS O. SHELLEY, *East Westmoreland, N. H.*

Florida Burrowing Owl in Pinellas Co., Fla.—During the spring of 1929 a pair of Burrowing Owls (*Speotyto c. floridana*) was found nesting on Hog Island off the west coast of Pinellas Co., Florida. As they are supposed to occur only in southern Florida the writer became interested in these new residents. They had taken possession of a land turtle's hole near the Gulf side of the island and had evidently cleared some of the sand out of it. One owl was always to be found on guard at or near the entrance of the burrow.

After the young owls had hatched both parents foraged for food and were very active during the day time.

In the following springs (1930 and '31) several more pairs were found nesting but whether new arrivals or offspring of the first pair could not be determined. The past spring an unusually high tide with a wind storm either drowned the owls or drove them elsewhere as no sign of them has been found since.

For a time it was feared that there would not be any more in this section but on May 15, 1932, a pair was found nesting on an adjacent island which is heavily populated. These birds also occupied a turtle's burrow the site being only six feet from a much travelled road and about seventy-five feet from an occupied house. They were very tame, one of them flying directly towards the observer to pick up a locust which he caught in one foot and carried to the burrow to devour.

These owls have the habit of making a collection of various articles which they place on the sand in front of the burrow, in this case an apple core, bits of paper and a cigarette package. The same thing was noticed on Hog Island, but as it is uninhabited the birds had to be content with shells, bits of sponge, and sticks. The food remains at all burrows examined consisted mainly of insects and now and then the remains of a toad.—MRS. HERMAN BETZ, *Box 508, Dunedin, Fla.*

Spix's Screech Owl in Ecuador.—In American Museum Novitates (No. 332, p. 3, 1928) Chapman records a specimen of *Otus choliba crucigerus* from the mouth of the Curaray, Ecuador. There are few, if any,

other records of the species from that country. It is therefore probably worth while to place on record a specimen in the U. S. National Museum (No. 30,966 U. S. N. M., unsexed, Napo Ecuador, collected by C. R. Buckalew) in the red phase, which, like the former specimen, may be referred to *Otus choliba crucigerus* (Spix).—LEON KELSO, *U. S. Biological Survey, Washington, D. C.*

Chuck-will's-widow again in Maryland.—Just after sundown on the evening of August 14, 1932, we heard a Chuck-will's-widow (*Antrostomus carolinensis*) at Clements, St. Mary County, Maryland. The bird was in thick woods composed chiefly of deciduous trees with many gums and here and there a pine, or a small group of pines, and called repeatedly for several minutes apparently from a pine tree within about fifty feet. Whip-poor-wills are abundant in this locality, and the difference in the notes of the two birds was easily appreciated.—AUSTIN H. CLARK and L. G. FORBES, *Washington, D. C.*

Chuck-will's-widow, a New Bird for Ohio.—On the evening of May 14, 1932, Mr. Conrad Roth, my brother, John S. Thomas and I, while cruising over the roads of Adams County, Ohio, near West Union, listening for the notes of a rare species of cone-headed grasshopper, were arrested by a strange bird song. We were able to flush the singer and were satisfied from its song and by its appearance in the moonlight that we had found the Chuck-will's-widow (*Antrostomus carolinensis*).

Three or four other singing individuals were noted in the immediate vicinity. The birds were in rather open, hilly country, about half of the area being covered with second growth woods—patches of oak, hickory and red-cedar, with some sugar maples in the moister situations. Whip-poor-wills were heard commonly, but were not noted in the immediate vicinity of any singing Chuck-will's-widow.

Four days later, Mr. Roth returned to the spot and collected a singing male, which was skinned and prepared by Mr. Charles F. Walker, and is now specimen No. 3875 in the Ohio State Museum collection. Mr. Roth informs me that there were at least eight individuals singing on the second occasion.

So far as I can ascertain this is the first record of this species for Ohio, although members of the Wheaton Club have been on the alert for it in southern Ohio for some time. Although Mr. Roth has a keen ear for bird and insect notes, he has never previously recognized the song of this bird during his extensive field-trips in both Scioto and Adams Counties.—EDWARD S. THOMAS, *Ohio State Museum, Columbus, Ohio.*

Nocturnal Habits of the Chimney Swift.—While the Chimney Swift is generally regarded as a crepuscular feeder, it is not infrequently seen coursing rapidly back and forth high in the air in bright mid-day. Records of its feeding at night, however, seem to be almost wanting.

On a number of occasions during the period of migration when these

birds are assembled in large flocks, they have been observed at night circling the great dome of our national capitol, feeding on the small insects attracted there by the powerful flood lights. The writer first observed this activity in the fall of 1929. He again observed it for about a week during both the spring and fall migrations of 1930. On the evening of April 26, 1931, a great swarm numbering several thousands was observed feeding until the lights illuminating the dome were turned off shortly after midnight. This was repeated each night until (and including) May 2. Throughout the week the flock remained about the same size. No large flock was again observed at night during the remainder of that spring or summer and capitol guards reported that none assembled there.

On the nights when flocking occurred at the capitol, the birds began to arrive in small groups from all directions about sundown, and by the time they normally would have been going to roost they had formed into one great swarm. For the first fifteen or twenty minutes after sundown the birds foraged over the tree tops and flew in all directions without any apparent system to their movements, except that they remained in a rather restricted area. Gradually, as it grew darker, a greater number were seen to fly more or less in the same general circular direction; in other words, there was a distinct impression of group movement. About the time the lights came on or shortly thereafter, all were following a definite course. Each time flocks of incoming birds disrupted the rhythm and unison of the concentric flight there was a momentary disbanding. When they reformed, however, all seemed instinctively to fly in the same direction. Most often the flight was uniformly circular, but occasionally it took the form of a conical cloud somewhat resembling a cyclone funnel. On one occasion it was seen to form a great figure "8" with one loop at a lower elevation than the other.

Probably because of the great concentration of light in a limited area, the greatest flocking occurred over the lawns and trees west of the building. As the birds came within the lighted area, they at first flew low over the lamp posts that surround the first floor, then gradually ascended in their concentric flight until they reached the dome. While the flock nearly always circled in one direction, each individual would fly in more or less zig zag fashion feeding upon small insects, but following the same general course. As the birds often flew within three or four feet of the observer while he was on the upper balcony of the dome, they could distinctly be seen catching the insects. Frequently small groups made short excursions into the darkness at a considerable distance from the dome, but each time they promptly returned.

Frequent observations were made throughout the summer of 1931, and from August 2 to the close of migration (late in October) a visit was made to the capitol each evening after dark. On three occasions during the summer one or two swifts were observed feeding near the lighted dome. Practically every night from one to fifty bats were observed. Two evenings, between nine and ten o'clock, a nighthawk was seen to pass through

the lighted area. Two Black-crowned Night Herons and three domestic pigeons were also noted at different times.

During the fall migration of 1931, when the swifts were known to assemble in great flocks for the night, I was somewhat surprised to find that on no occasion did the birds gather at the capitol for night feeding. During the spring migration of 1932 continued observation was made and it was not until the evening of May 4 that any concentration of swifts occurred over the capitol grounds. This particular night was cloudy and the lights were not turned on until almost dark—fully fifteen minutes late. After the lights came on the birds did not come within the lighted area and after ten minutes more of circling they separated into two large flocks and disappeared over the city. The next evening was clear and warm and the birds began to assemble at the capitol before sundown. Throughout this entire evening until after dark when the birds separated into a number of smaller flocks and disbanded, they did not come within the lighted area, but remained over the lawn and trees west of the building. On the 6th, 7th, and 8th no concentration of birds appeared, but on the evening of the 9th approximately 2,000 gathered and came within the lighted area near the dome. When they first came into the light the majority of the birds left the flock and foraged in the light over both the Senate and House wings. In about three minutes they reassembled into one flock and circled the dome—the area of greatest light concentration—where they remained until the lights were turned off shortly after midnight. This flock was probably not more than half the size of other flocks that had been observed at the capitol. Perhaps the majority of the birds of the original flocks had migrated northward.

On succeeding evenings no flocking appeared at the capitol until May 14 when a small group of about one hundred came near the dome at 7:23 p. m. They circled the dome three times and then disappeared over the city. No swifts were observed at nights after that date.

A probable explanation for the retarded and sporadic night flying of these accomplished fliers at the capitol in the spring of 1932 and their entire absence there in the fall of 1931, may be found in the temporary removal of four large flood lights on the west portion of the building. These four illuminators represented a total of 8,000 watts of electric power and were removed early in September 1931 when improvements on the steps and walks in front of the building were begun.

It is quite probable that swifts occasionally feed at night in well lighted zones over cities. At 9:45 p. m. on May 20, 1931, their characteristic sharp twittering notes were heard over Lafayette Park in Washington. Again at 11 p. m. on this same evening a number were heard several times over the vicinity of F and 7th Streets N. W. The fact that the night was unusually dark and cloudy with intermittent light showers, appeared to make no difference to the birds. Because this particular day and one or two preceding had been somewhat stormy and cooler it may have reduced the normal food supply, thus compelling the birds to feed at night.—CLARENCE COTTAM, U. S. Biological Survey, Washington, D. C.

Odd Nesting Site of Western Flycatcher.—While visiting Mr. James Ortega at Yountville, Napa County, Calif. on June 19, 1927, he invited my attention to a nest of the Western Flycatcher (*Empidonax difficilis difficilis*) built between the antlers of a pair of deer horns which hung on the wall close to the ceiling of the room in which he kept his specimens. He told me that the flycatchers had built the nest there, coming in through the window which was open at the top for a foot or so. The birds had deserted the nest about three days previous and Ortega allowed me to take the four slightly incubated eggs together with the nest.—EMERSON A. STONER, Benicia, California.

A Lower California Record of the Northern Violet-Green Swallow.—During the course of a recent visit to the Gulf of California with Mr. J. R. Pemberton, several mainland points were visited in addition to the many islands, the investigation of whose natural history constituted the main object of the cruise. On January 20, 1932, the 'Petrel' was at anchor at the extreme south end of Concepcion Bay on the Gulf coast of Lower California, a locality where several mangrove-bordered lagoons penetrated for short distances into a forest of giant cactus. Over the lagoons and adjacent desert were milling flocks of Violet-green Swallows in which were birds obviously of two distinct sizes. I collected one specimen of each more as a matter of routine than with any thought that the presence of the larger race was noteworthy, but on consulting Grinnell's recent Lower California 'Summation' I find that the presence of *Tachycineta thalassina lepida* in Lower California, in winter, rests on the rather meager basis of a specimen taken at La Paz in February and a sight record made in February in the Delta of the Colorado River. Therefore it may be advisable to place on record the present instance. As to the relative abundance of the larger *lepida* and the smaller, resident race *brachyptera* which were present at Concepcion Bay on the above date, it was my belief at the time that they were in approximately equal numbers. Certainly both were to be called abundant.

It is almost certain that the scarcity of more northerly winter records of the Northern Violet-green Swallow simply reflects lack of observation at that season. This race is probably fairly common and of regular occurrence in winter north as far as the Delta where Rhoads noted it in February, 1905, and Wright (Trans. San Diego Soc. Nat. Hist., 6, no. 19, 1931, 267) in February, 1929, and even into the Imperial Valley of California where I personally met with numbers in the winter of 1910-11.—A. J. VAN ROSSEM, California Institute of Technology, Pasadena, California.

The Song of the Red-breasted Nuthatch.—As the true song of the Red-breasted Nuthatch (*Sitta canadensis*) seems not to be generally known and never to have been fully described in the books, it seems worth while to put on record in 'The Auk' as adequate a description as I can give of the song as I have heard it this spring of 1932. I heard the song many

times between March 27 and May 14 of this year from a bird near my house in West Roxbury, as well as on two occasions from two other birds in other places in eastern Massachusetts. The song when I first heard it (March 27) was so strongly suggestive of that of the White-breasted Nuthatch (*Sitta carolinensis carolinensis*), yet so different in tone, that though I could not at the time follow up the bird to identify it, I had little doubt that it was a Red-breasted Nuthatch. On April 6 I heard the song again and was then able to connect it definitely with *Sitta canadensis*, for I saw the bird in the act of singing. After that and up to the time when the bird left us, presumably for his breeding-haunts farther north, I heard the song frequently, and I never had any difficulty in distinguishing it from that of its white-breasted cousin, which I also heard nearby not infrequently. The song resembles the familiar *wa-wa-wa-wa*, etc., or *what-what-what*, etc., of the other species, but is more rapid and higher-pitched and possesses a reedy quality unlike the smooth, liquid tone of the other. The strange thing about it is that it should be so rare, or at least so little known. I have been pretty familiar with the species for many years, not only on migration and in the winter in eastern Massachusetts, but also on its breeding-grounds in northern New England and elsewhere in the breeding-season, but I had never before heard the song, nor have any of the ornithological friends whom I have consulted, including the members present at two meetings of the Nuttall Ornithological Club. I have as yet found in the literature but three descriptions of vocal utterances of the Red-breasted Nuthatch that approximate the one I have described, and not one of the three seems to correspond with it exactly. Dr. Walter Faxon in 'On the Summer Birds of Berkshire County, Massachusetts' (Auk, 1889, p. 105) says: "Like its White-bellied cousin this bird at times repeats its nasal *hank* for a protracted period and with rapidity, suggesting to my ears the call of a pygmy Flicker. This seems to be its song proper." This may be the song I have heard, but to my ears the note repeated is not at all the familiar 'nasal *hank*' of the call-note but a much softer note that is not particularly nasal. Dr. Charles W. Townsend in 'Supplement to the Birds of Essex County' (Memoirs of the Nuttall Ornithological Club, No. V, p. 173, 174) says: "The courtship song may often be heard in the early spring. It consists of a rapid repetition of its short tin-trumpet calls. Sometimes the song is given from a perch and the wings are slightly open. In a March snow-storm at Ipswich I heard this given at the rate of one hundred notes a minute. The bird was apparently circling above me out of sight in the falling snow. At last I saw him descend and alight in a maple tree where he continued to sing for about half a minute longer." This performance, as described by Dr. Townsend, certainly looks like a "courtship song," but it is not the song I have been hearing this year. That is shorter and much more rapid, and the individual notes are not 'tin-trumpet calls.' Mr. Edward Howe Forbush, in 'Birds of Massachusetts,' Vol. III, page 361, gives under the head of 'Voice' for this species, "Song, a fine, sweet trill of seven or eight syllables

uttered while on the wing," citing Miss J. O. Crowell (a correspondent) as authority. This may be a variant of the song I have described, but it is much shorter, and I never heard the song delivered on the wing. So much for the three approximations I have referred to. Most authors appear to take it for granted that the bird is songless. I myself had previously supposed that a succession of call-notes constituted the only song of the species. That keen observer and careful recorder of bird-song, Mr. Aretas A. Saunders, had the same impression when he wrote in 'The Summer Birds of the Northern Adirondack Mountains' (Roosevelt Wild Life Bulletin, Vol. 5, No. 3, page 374), "Occasionally it produces three or four prolonged notes in succession, 'ya-a-a-a-a, ya-a-a-a-a, ya-a-a-a,' which I believe represents the song of the species, for at such times the bird perches with head up in a song pose." It seems to me that if we call the *hah-hah-hah-hah-hah* (Chapman's rendering) of the White-breasted Nuthatch the regular song of that species—and it is certainly used as a song—we must consider the corresponding effort of the Red-breasted Nuthatch its regular song, in spite of its apparent rarity, though that does not preclude the possibility of a succession of ordinary call-notes being used for song purposes on occasion. The whole matter, however, seems to be somewhat mysterious. If, as appears, the Red-breasted Nuthatch has a perfectly good song, completely differentiated from the call-notes, why does he, as a rule, make so little use of it?—FRANCIS H. ALLEN, *West Roxbury, Mass.*

Nesting of Brown-headed Nuthatch at Amelia, Va.—The nesting of a pair of Brown-headed Nuthatches (*Sitta pusilla pusilla*) near Amelia, Virginia, forty miles west of Richmond on latitude 37° 20', and at an altitude of 280 feet, would seem to be of sufficient interest to warrant publication, as it appears to be considerably out of the usual nesting range of that Lower Austral species.

The nest was in a hole in an old cedar fence post that stands on the bank of a small stream, with pine woods on the south and an open pasture on the north. In late March the birds, the first ones observed in this country, were seen going to this hole, and thereafter I watched them as closely as limited time would permit.

On April 14, the faint chirping of the young birds was heard for the first time.

The parents were seen to feed the young on April 18, 24, 25, and 26 and on the last occasion the latter seemed to be fully grown and put their heads out of the hole to be fed. They had left the nest by April 30, after which I saw nothing of parents or young.—JOHN B. LEWIS, *Amelia, Va.*

Palmer's Thrasher, an Addition to the Florida List.—I record herewith the taking of an adult male Palmer's Thrasher (*Toxostoma curvirostre palmeri*) near Pensacola, Fla., on June 11, 1932. As far as is at present ascertainable, this form has never before been recorded east of Arizona, though a closely related race, the Brownsville Thrasher (*T. c. oberholseri*), ranges regularly to southeastern Texas.

The bird was first seen on June 5 when I was visiting the local Boy Scout Camp on Santa Rosa Sound, about twenty miles east of Pensacola. With me at the time were my three assistant instructors in Bird Study, Messrs. R. C. McClanahan, Jack Purdy, and C. L. Smith, Jr. All four of us, as well as some of the boys, had excellent views of the bird as it fed unconcernedly on the ground in an open sandy patch immediately behind the Camp and about fifty yards from the shore of the Sound. When we approached it, it would run (with noticeably longer strides than those of its common eastern relative) and then take wing with a whistled *whip-whip* of alarm. In flight it was surprisingly like the Brown Thrasher both in shape and actions, though its dull brown color and long curved bill distinguished it at once even from a passing glimpse.

Since the bird was apparently established in the locality—it returned to its feeding place several times within a few minutes of having been disturbed—it seemed wiser for us to take a chance on its staying in the vicinity for a few days until camp should be broken than to risk undoing any possible results of our teachings in conservation by borrowing a gun and shooting it in the presence of a number of small boys. Upon revisiting the spot late on June 11, I had no difficulty in securing the specimen.

Upon examination it proved to be an adult male in full sexual development. It was sent to the Biological Survey, where Mr. Arthur H. Howell identified it as a typical example of the Palmer's Thrasher, an opinion that was later confirmed by Dr. H. C. Oberholser. It was the further opinion of both gentlemen that the presence of this bird so far from its normal range could not be accounted for by human agency since the specimen shows no evidence of being an escaped cage bird. It is now in the Survey collection.—FRANCIS M. WESTON, Bldg. 45, U. S. Naval Air Station, Pensacola, Fla.

The Golden-crowned Kinglet, a Summer Visitor in the District of Columbia.—Lying well within the boundaries of the District of Columbia, and bordering the East Branch of the Potomac River, is a tract of land, partially wooded and partially old fields somewhat overgrown with scrubby underbrush, that has been officially set aside to be developed as a national arboretum. As yet nothing has been done other than to make tentative plans for this area, with the result that there now exists, within sight of the nation's Capitol, a bit of wilderness possessing quite a varied bird life. On the morning of July 25, 1932, Arthur H. Howell and the writer, while making observations on the summer bird life of this arboretum, saw a Golden-crowned Kinglet (*Regulus satrapa satrapa*) at the edge of a stretch of rather open woods. The foliage of the tree in which it was feeding, a dogwood, was rather dense, and had it not been for its characteristic notes the bird would undoubtedly have been overlooked. It fortunately proved not at all shy, so it was possible for us to watch it for several minutes as it fed overhead within a few feet of where we were standing, and to establish its identity beyond any question. There are no other records for

the occurrence of this species in the District during the summer months, and the presence of this one bird here at this time, after a week or more of clear hot weather, is therefore of considerable interest.—THOS. D. BURLEIGH, *Bureau of Biological Survey, Asheville, N. C.*

Ruby-crowned Kinglet Feeding Young in Massachusetts.—In the State Forest at Savoy, Mass. is a hill 2600 feet high and crowned with an old stand of spruce. Olive-backed Thrushes, Golden-crowned Kinglets, Juncos, and Magnolia and Myrtle Warblers, with many other less Canadian species, nest on this height, and in the deciduous coppice fringing the spruce, many Mourning Warblers breed. Here on July 3, 1932, I saw a Ruby-crowned Kinglet, feeding a fluffy fledgling that could hardly have been out of the nest more than a day or two. To make the adult's identity certain, it raised its scarlet crown-feathers. Corroborating the identification I had with me Messrs. Harry E. Woods and W. J. Cartwright. The latter has twice before found the species there in July. On July 5, 1915, he followed about the spruce-grove a flock of twenty or so, including young still being fed and males in song; and on July 19, 1920, he found six individuals. There seem to be no nesting records for Vermont or New Hampshire, and it is hard to believe that the Ruby-crown should breed, even sporadically, in Savoy, without also breeding in the Green Mountains which extend, higher and higher, northward from there.—AARON C. BAGG, 72 Fairfield Ave., Holyoke, Mass.

European Starling (*Sturnus vulgaris vulgaris*) Breeding in Florida.—Howell, writing after the end of the breeding season of 1931, stated of this species (*Florida Bird Life*, p. 374) that "no instances of nesting in Florida have been reported." In fact, the few recorded occurrences in the State at that time indicated that it was merely an irregular winter visitor in small numbers. However, on August 31, 1931, and again on September 29, I saw a flock of about thirty birds at Kupfrian's Park, an abandoned and overgrown race course on the northwestern edge of the city of Pensacola. Since these dates were far earlier in the fall than I had ever noted this species, it occurred to me that the birds may have nested in the Park.

I visited the Park several times during April, 1932, and on April 27, Mr. Jack Purdy, of Pensacola, and I saw a Starling, carrying food in its beak, enter an old woodpecker hole in a dead sweet gum tree (*Liquidambar styraciflua*) and emerge a moment later with its beak empty. Since the hole was in a rotting stub at least thirty feet from the ground, inspection of the nest was impracticable, but on that afternoon, and on succeeding days, two adult Starlings were seen repeatedly to enter the hole carrying food, thus definitely establishing the fact of breeding. Another nest, similarly inaccessible, was found a day or two later by Mr. W. P. Proctor, at Saunders Beach, an amusement park on the southwestern edge of the City.—FRANCIS M. WESTON, Bldg. 45, U. S. Naval Air Station, Pensacola, Fla.

Wayne's Warbler, An Addition to the Virginia Avifauna.—On a recent trip into the Virginia end of the Dismal Swamp, in company with Dr. William B. McIlwaine, Jr., we were fortunate enough to find definite breeding evidence of Wayne's Warbler (*Dendroica virens waynei*), thus confirming a hypothetical statement in the 1931 'Check List.' In 'The Auk' (XLIII, October, 1926, pp. 552, 553) Russell Richardson, Jr., reported finding the Black-throated Green Warbler in the Dismal Swamp on the North Carolina side in June, 1926, but did not find any evidence of its breeding. I judge that it is this record to which the 'Check-List' refers when under the Black-throated Green it has, "recorded in Virginia (Dismal Swamp) in summer (possibly *D. v. waynei*)."

In the range of Wayne's Warbler, "resident" should, of course, have been "summer resident" (cf. Sprunt 'Auk,' XLIX, April, 1932, p. 238) and mention should have been made of the breeding of the Black-throated Green in southeastern North Carolina 'Birds of North Carolina,' p. 295, by Pearson and the Brimleys).

We found Wayne's Warbler fairly common wherever we went in the Swamp. These were not late migrant Black-throated Greens, for at two places on May 24, 1932, we found a pair accompanied by young birds which were just able to fly and which were being fed by the adults. One of these family groups was seen along the trail leading from the government property at the mouth of the Feeder Ditch across to the mouth of the Portsmouth Ditch. The other pair was seen about half a mile up the Jericho Ditch from the northern shore of the Lake. We watched the first pair for about thirty minutes using 8x glasses. There was no question from the first moment as to the identity of the adult birds, but we wanted to be absolutely sure as to whether the young birds belonged to them. There were two of the young, with very short tails. They continually called for food and the adult birds made dozens of trips to them during this time. While we never succeeded in actually seeing the transfer of food from mouth to mouth, we saw the adults go to the young birds with food again and again. During this thirty minutes or more the group did not move more than seventy-five yards from the spot where we first saw them. The adults at times came within ten feet of us in their search for food but the young were usually high up in the trees. I had no good opportunity to collect one of the young and did not wish to shoot either of the parents while the young were still so dependent on them.

We saw the second pair later on during the same day and watched them for a shorter period but long enough to be sure that they also were accompanied by young to which they were carrying food. In addition to these two family groups we heard two males singing on May 23 as we came down the Washington Ditch to the Lake; two males singing on the 24th near the entrance to the Feeder Ditch on the northeastern shore of the Lake; and six males on the 26th as we went along the Washington Ditch on our way out of the Swamp. I may add that the various other warblers which we found in the Swamp, with the exception of the Black-polls, acted as if settled for breeding. We found Prothonotary nests with eggs

and young, and saw Redstarts and Hooded Warblers carrying food. It would seem that although no specimens were taken the data here presented should establish the breeding of this form of the Black-throated Green Warbler in the southeastern corner of Virginia.—J. J. MURRAY, *Lexington, Virginia*.

Kentucky Warbler (*Oporornis formosus*) Nesting in Florida.—Howell, in giving (p. 415) the status of this species classes it only as a transient in Florida, and adds that it "probably breeds in extreme north-western Florida"—an opinion based upon my report of having seen singing males near Pensacola in June and July of several years.

On May 15, 1932, Messrs. Donald Purdy, Frederick Wicke, and I came suddenly upon a pair of Kentucky Warblers deep in the heavily wooded swamp of the Escambia River, about fifteen miles north of Pensacola. It was certain, from the excited behaviour of both birds, that a nest was near at hand, and we retired for a short distance to give the birds an opportunity to return to it. Upon approaching the spot the second time, the female immediately flushed from the nest, in which were five newly hatched young birds. The nest was a bulky structure of dead leaves—particularly dead reed blades—lined with fine rootlets, its upper edge about eight inches and its bottom about four inches above the wet ground. It was concealed on the edge of a small clump of young cane (*Arundinaria* sp.) within five feet of a well-marked path. We passed that way again about thirty minutes later and found the female sitting closely. She allowed us to inspect her from the path for as long as we wished, but flushed as soon as we stepped out and rustled the underbrush. Another visit on May 18 showed the nest conspicuously exposed and empty.—FRANCIS M. WESTON, *Bldg. 45, U. S. Naval Air Station, Pensacola, Fla.*

Bobolinks Nesting in Southeastern Pennsylvania.—On June 25, 1932, Miss Emily Haines of Haddonfield, N. J., when visiting in our neighborhood informed me that on the preceding day she had found a colony of at least six adult male Bobolinks in a grass field about a half a mile from Kennett Square, Pa. On July 1, during a half hour's observation I found four males and at least two females, one or more of the birds being visible almost constantly the males either flying with their slow fluttering movements or perching on trees or fences. I heard but few songs but my companion heard frequent songs from both perching and flying birds. On her earlier visit she reported having seen a female with food in her bill drop down into the high grass. On July 3 we saw but two of the birds probably on account of the high wind.

The location is four miles from the Pennsylvania-Delaware line and nine from the Maryland line and the elevation about 450 feet. It is perhaps the most southern breeding record of the species at least so near the Atlantic Coast.—CHARLES J. PENNOCK, *Kennett Square, Pa.*

The Type of the Black-headed Grosbeak.¹—Thanks to the efforts of Dr. N. B. Kinnear of the British Museum it is now possible to determine the identity of Swainson's type of *Guiraca melanocephala* and, in consequence, to assign what it is hoped will be stable names to the two currently recognized races of this species.

Acting on the possibility that the location of the type specimen would be known to Dr. Kinnear, providing it was still in existence, I wrote him concerning it. After some search it was located in the collection at Cambridge and portions of Dr. Kinnear's letter (dated December 14, 1931) concerning this specimen are quoted here. "I was at Cambridge on Friday and brought away with me the type of *Guiraca melanocephala*. It is in quite good condition—a semi-flat skin and appears * * * rather intermediate in [bill] size between the two races. The measurements are as follows: bill, exposed culmen, 16.5 mm.; from base, 19.5 mm.; depth [of bill from base of exposed culmen to malar apex], 15.0 mm.; wing on curve [chord], 106.5 mm.; straight, 108.0 mm.; tail, 82.0 mm.; tarsus, 26.0 mm. The original label in Bullock's handwriting reads:—'Found in the neighborhood of Temiscaltepec [sic], feeds on maize, eyes brown'. All of the measurements, save for the intermediate bill, identified the type unmistakably with the larger, interior race but in order to make doubly sure I later sent to Dr. Kinnear a typical adult male of each race, labeling the larger one *melanocephala* and the smaller one *maculata*. Under date of July 18, 1932, he wrote me further:—"The birds arrived safely and I have got the type of Swainson's *melanocephala* from Cambridge which agrees with your example of *melanocephala* in the size of the bill." Although Dr. Kinnear did not state the sex of the type he makes certain comments which definitely place it as a fully adult male with the head solidly black and the dark feathers of the interscapular region prominently edged with rusty brown. One may infer from the last item that the type was collected in the fall or early winter.

In order to accord with the above findings the Rocky Mountain Black-headed Grosbeak will have to be known as *Hedymeles melanocephalus melanocephalus* (Swainson) while the smaller race which breeds on the Pacific coast and south into western Mexico takes the name of *Hedymeles melanocephalus maculatus* (Audubon).²—A. J. VAN ROSSEM, Pasadena, California.

The Red Crossbill at Lawrence, Kansas.—Although the Red Crossbill (*Loxia curvirostra pusilla*) has been reported on various occasions in years past from the Lawrence region, its appearance here is very irregular and it has never occurred over such an extended period as during the past

¹ Contribution from the California Institute of Technology.

² *Fringilla maculata* Audubon, Birds of America, folio, 4, 1837, pl. 373, figs. 2, 3, 4 (Columbia River, Oregon); see also Oberholser, Auk, 36, July, 1919, pp. 410-11 and van Rossem, Trans. San Diego Soc. Nat. Hist., 6, No. 19, Apr., 1931, pp. 292-3.

winter (1931-32). On November 28, 1931 W. S. Long, fellow member of the museum staff, and myself sighted a flock of sixty or more of these birds which flew close enough to be identified as crossbills. Crossbills were not seen nor reported again until February 20, 1932, when I managed to collect six birds out of a flock of fourteen near the same place. On the following day, at the same locality, where the birds were feeding on wild sunflower seeds, Mr. Long and I each managed to secure a specimen, and two other were seen. On March 1 they were discovered feeding in the pines on the campus and on March 1, 2, and 4 various persons reported seeing between thirty and forty of the birds on the campus at a time. Other records in varying numbers were made on the campus up to March 15, and another large flock was reported on the 25th. On the following day Mr. Long and myself collected sixteen of the birds about two miles north of Lawrence, which were discovered feeding on the ground, picking up wild sunflower seeds. Eight were observed on the campus on the 27th; seven on the 30th; sixteen on April 4, and finally Mr. Long reported four individuals observed at close range on May 23, also on the campus.—J. D. BLACK, *Museum of University of Kansas, Lawrence, Kansas.*

On the Validity of the San Clemente Island Bell's Sparrow.—

Many years ago Ridgway¹ named the Bell's Sparrow of San Clemente Island, California, *Amphispiza belli clementae* on the basis of supposedly larger size. A short time later² the same author discredited the race because he believed that the differences were "too slight to warrant recognition." It is true that the table of measurements³ shows the wing and tail of the San Clemente specimens to be almost identical with California and Lower California birds, but nevertheless the larger bill size of the island birds is readily apparent in the published figures.

For some years there have been four worn-plumaged birds from San Clemente in the Dickey collection at the California Institute of Technology, all of which showed the definite character of relatively large bill and, in addition, a slightly paler and grayer dorsal coloration. On October 25, 1930, Mr. J. R. Pemberton, to whom I am indebted for various opportunities to visit the islands of the Santa Barbara group, provided the necessary transportation on his yacht 'Petrel' and, among other birds, I was able to take on San Clemente five fresh-plumaged Bell's Sparrows. Search of other local collections disclosed eight worn-plumaged adults and five juveniles in the Los Angeles Museum, thus making available for study 22 examples of the species from San Clemente Island. Comparison of this series with a series of 31 *Amphispiza belli belli* (Cassin) from localities ranging from San Martin Island and San Quintin, Lower California, north to San Benito County, California, shows that some distinctive characters are apparent in the San Clemente series. I fully agree that there are no tangible differences in the wing and tail dimensions as between island and

¹ Auk, 15, July, 1898, 230 [Separates issued May 13 or 14].

² Birds of No. and Mid. Amer., 1, 1901, 267.

mainland birds, and that in very worn plumage the color differences are so slight as to be barely perceptible, even in series. However, the following particulars are definite and seem to me to afford ample grounds for the recognition of the insular race.

In comparison with *belli* the island birds have slightly, but noticeably, longer bills; the dorsal coloration of freshly plumaged adults is definitely paler, grayer, and more clearly streaked, and the juveniles are paler and with very much narrower ventral streaking; the juveniles, in fact, resemble the young of *Amphispiza belli canescens* Grinnell more than they do those of *belli*. The exposed culmens of 25 *belli* (sex ignored) average 8.9 mm. while those of 17 *clementae* average 10.1.

The characters of *belli* are most pronounced in the San Diego Faunal District. Specimens from San Benito County (Mulberry) are not so typical for they are slightly paler in color. This presumably is the result of contact between *belli* of the coastal slope and *canescens* of the interior valleys.—A. J. VAN ROSSEM, *California Institute of Technology, Pasadena, California*.

Clay-colored Sparrow in New Jersey.—On May 8, 1932, J. L. Edwards of Montclair, N. J., sitting with the writer in a parked car at the end of the road south of Beach Haven, N. J., happened to see an unfamiliar-looking sparrow feeding on the bare sand very near the car. Close to it was a Field Sparrow which permitted size comparison. The stranger was a small-bodied bird with the shape and general proportions of a Chipping Sparrow. We studied it carefully for a long time at close range and identified it as a Clay-colored Sparrow (*Spizella pallida*). We had no gun and a later "armed" visit on May 12 was unsuccessful, and although we believe that we saw the bird again, it escaped due to the high wind and rain.

Prompt checking of our mental picture and written notes against museum specimens removed any shadow of doubt from our minds as to the bird's identity. It agreed in every detail. The bird was unstreaked below, underparts white with a definite dark wash on the sides of the breast. There was a rather thin light medial line through the darker crown and a white line over the eye. The upper parts showed very little if any rufus and the general effect was of a rather light colored bird. The back was finely streaked with alternate lines of dark and a color we described first as cream, then as creamy buff. The rump color, as closely as we could judge, conformed to the specimens examined.

The credibility of the identification is increased somewhat by the rather recent collection of specimens on Cape Cod, Mass., by Oliver Austin, Jr. The species may not be as rare in the East as has been supposed.—CHARLES A. URNER, *Elizabeth, N. J.*

Migration Dates for the Snow Bunting in Montana.—The scarcity of published data from Montana concerning the migrations of the Eastern

Snow Bunting (*Plectrophenax nivalis nivalis*) prompts me to place on record the migration dates for this species that I have obtained at Fortine, in the extreme northwestern corner of the state. The dates here given record the earliest occurrence of this species in fall and the latest occurrence in spring. Fall arrival: last week of August, 1920; October 15, 1921; October 14, 1922; September 18, 1927; October 26, 1928; September 11, 1929; September 1 (common by September 19), 1930; September 8, 1931. Spring departure: March 16, 1921; March 26, 1922; March 25, 1923; March 20, 1928; April 15, 1929 (flock of about 150); March 26, 1930; April 22, 1931; April 2, 1932.

The earliest fall and latest spring migration dates for this species in Montana contained in previously published records seem to be October 26, 1895, and April 2, 1890 (Cooke, Bird-Lore, xv, p. 17).—WINTON WEYDEMEYER, Fortine, Montana.

Notes from the Massachusetts Coast.—*Casmerodius albus egretta*. AMERICAN EGRET.—Driving down Plum Island to the Night Heron rookery toward sunset, May 15, 1932, we saw an Egret flying diagonally toward our destination.

Nyctanassa v. violacea. YELLOW-CROWNED NIGHT HERON.—As we arrived at the heronry a Yellow-crowned Night Heron took flight among the Black-crowns circling over the nests.

Somateria mollissima dresseri. AMERICAN EIDER.—On the late date of May 29, 1932, we were astonished to find close to the shore at North Truro nine female Eider Ducks and fifty-five males four or five of the latter in black-headed brown-patched plumage but the rest apparently adults which should have been breeding at this date.

Uria l. lomvia. BRUNNICH'S MURRE.—On May 15, 1932 we found on the sandy road an exhausted Brunnich's Murre which we banded and liberated on the beach but next day found its remains there partly devoured by some animal.—SAMUEL A. ELIOT, JR., Northampton and AARON C. BAGG, Holyoke, Mass.

Notes from the Connecticut Valley in 1932.—*Stelgidopteryx ruficollis serripennis*. ROUGH-WINGED SWALLOW.—This bird is certainly growing more common with us. This year three pairs were observed in May, inspecting likely nesting-places in Northampton. Only one pair, however, nested: Mr. Eliot found the nest, in a burrow apparently dug out by the birds themselves, on June 7.

Thryothorus l. ludovicianus. CAROLINA WREN.—A lone individual was seen in Sunderland April 2 by Prof. and Mrs. W. S. Welles.

Telmatodytes palustris dissaepus. PRAIRIE MARSH WREN.—This bird, hitherto regarded as a mere casual migrant or stray north of Longmeadow where a very few breed, was this year found colonizing a narrow slough in Hadley which runs east and west under the protecting lee of a high north bank, and grows reeds rather than cat-tails. Five or six males were occupying sections of this slough, singing about sixty feet apart.

Cistothorus stellaris. SHORT-BILLED MARSH WREN.—This species has notably increased in numbers and distribution. Within ten miles of Northampton, four breeding-places are now known.

Vermivora pinus. BLUE-WINGED WARBLER.—Not only did two pairs of Blue-winged Warblers nest in southern Longmeadow—a remarkable occurrence—but on May 21 a male was found singing in Northampton, twenty miles farther north. In 1931, one was heard there May 16 and 17 but did not stay.

Dendroica d. discolor. PRAIRIE WARBLER.—A new colony—of this with us a very local species, near the north limit of its range—was found occupying the scrub oaks on some burnt-over rocky ridges west of Florence. Moreover, isolated males were heard singing regularly in late June at two other new places, one in pitch-pine country and one in a cedar-pasture.

Dendroica magnolia. MAGNOLIA WARBLER.—Three singing birds were discovered June 21 just west of the Northampton city-line, at an elevation not over 500 feet and in almost spruceless country.

Oporornis philadelphia. MOURNING WARBLER.—The occurrence of five male Mourning Warblers at five different places in Northampton on May 18, 21, 24, 25, and 26, was remarkable. There were only two or three previous records for that city. That these males were different birds was confirmed by their distinctive songs, each one noted down and possessing nothing in common but their throaty tone.

Icteria v. virens. YELLOW-BREASTED CHAT.—A pair of Chats bred near the Blue-winged Warblers in Longmeadow.—S. A. ELIOT, JR., Northampton and AARON C. BAGG, Holyoke, Mass.

Notes from Madison, Wisconsin.—*Casmerodius albus egretta*. AMERICAN EGRET.—An Egret was found feeding with Great Blue Herons at the northern end of Lake Kegonsa on August 7, 1932. I was able to get within 150 feet of it, under cover of the vegetation. The position soon became untenable since three small boys opened up a long distance barrage with .22 rifles from the blind on Stoney Point. This is the sole occasion on which I have seen this species in the county.

Thryomanes bewicki bewicki. BEWICK'S WREN.—A bird of this species was found at Pheasant Branch on April 2, 1932. While maneuvering to get a shot, a Screech Owl unfortunately flushed from a small white oak in which it was roosting. The Wren greatly excited finally dashed into a pile of brush. Fearful of losing the specimen I took a shot though the bird was partially concealed. It flew away apparently uninjured and in spite of repeated visits could not be found again.

Bombycilla garrula pallidiceps. BOHEMIAN WAXWING.—There was an exceptional influx during the past winter and at its height there were fully a thousand birds in the west end of Madison. They were noted from February 7 to March 23, 1932.

Seiurus motacilla. LOUISIANA WATER-THRUSH.—This Water-Thrush was found in Parfrey's Glen, Sauk County, on April 10, 1932. This date represents the earliest arrival in southern Wisconsin of which I am aware.

Zonotrichia leucophrys gambeli. GAMBEL'S SPARROW.—Of a pair of White-crowned Sparrows found on May 7, 1932, one was clearly a male *Z. l. leucophrys*. The other was so like *gambeli* that it was collected. It proved to be a female of the latter form. This bird was taken in the same spot where the juvenile was collected on Oct. 16, 1927.—A. W. SCHORGER, Madison, Wis.

Field Notes from Sioux City, Iowa.—*Guiraca caerulea lazula*. WESTERN BLUE GROSBEEK.—On June 25, 1932, a male was noticed about one mile east of Sioux City and on June 28, another was seen about five miles northwest of the city.

Iridoprocne bicolor. TREE SWALLOW.—A pair was found nesting at Loblolly Lake, Union County, South Dakota, about three miles from Sioux City. This swallow is a regular migrant, but a very rare summer resident.

Sterna antillarum. LEAST TERN.—A few have been seen this year, but conditions for nesting have not been favorable. The government has been doing extensive work on the channel of the Missouri River, in the way of revetments, dikes and piling, and as a result many sand bars are gone, being cut out by the narrowing channel. The birds will no doubt move up the river, above Sioux City, where construction will not be carried on and where dozens of sand bars still exist.—WM. YOUNG WORTH, Sioux City, Iowa.

Notes on Some Birds from St. Lucia, B. W. I.—In view of the fact that a report on the birds of St. Lucia, the largest of the Windward Islands of the British West Indies, is now in course of preparation by my friend Dr. Stuart Danforth, of the University of Puerto Rico, Mayaguez, Puerto Rico, I have thought it best to publish certain results of my second collecting expedition to St. Lucia in May and June 1929. The principal result was the rediscovery of the St. Lucian Black Finch (*Melanospiza richardsoni*) an account of which has already appeared in 'The Auk' (Vol. XLVI, 1929, pp. 523-6). The following notes merely supplement my account of the birds of this island: 'On the Birds of Dominica, St. Lucia, St. Vincent and Barbados' (Proc. Acad. Nat. Sci. Phila., Vol. LXXX, 1928, pp. 522-545).

Gallinula chloropus cerceris Bangs. As Dr. Wetmore has pointed out (Sci. Surv. of Porto Rico and the Virgin Islands, Vol. IX, part 3, p. 345) if the type of *cerceris* of Bangs is based on a melanistic individual and birds from St. Lucia should prove identical with those from other West Indian islands, the name of the West Indian race would have to become *Gallinula chloropus cerceris* in lieu of *portoricensis*, Danforth. Three specimens (A. N. S. P. 86377-9) collected by me in the Bois d'Orange Swamp in northern St. Lucia on June 5, 1929, prove conclusively that the normal St. Lucian bird is similar to Florida Gallinules from elsewhere in the West Indies.

Oreopeleia montana martinica (Linn.). Ridgway describes *martinica* as "much larger" than *montana* but his measurements do not indicate this.

For instance his wing measurements of the males of both forms are, for *martinica* 144.5–157 mm. and for *montana* 139–149.5, not a great difference! Ruddy Quail Doves become gradually larger as one progresses northward through the Lesser Antilles. The range of *martinica* is given as Guadelupe to St. Vincent, but there is considerable difference in size between the birds of these two islands as evidenced by Ridgway's measurements:—

| | Wing | Tail | Culmen | Tarsus | Mid. Toe |
|----------------------------|------|------|--------|--------|----------|
| Three adult males from | | | | | |
| Guadeloupe..... | 155 | 85 | 13.2 | 33 | 27.7 |
| One adult male from St. | | | | | |
| Vincent..... | 150 | 78 | 13.5 | 33 | 26. |
| Two adult females from | | | | | |
| Guadeloupe..... | 153 | 80.5 | 14.7 | 33 | 26.2 |
| Two adult females from St. | | | | | |
| Vincent..... | 139 | 75 | 11.7 | 29 | 24. |

Specimens from St. Vincent in the American Museum of Natural History which I have examined are definitely intermediate between *montana* and *martinica* both in size and coloring and might well be regarded as a new subspecies connecting these two distinct forms. Grenada birds are best classed with *montana* though both males and females appear to average darker than typical birds of that race. St. Lucian birds may be regarded as *martinica*.

Antrostomus rufus otiosus Bangs. I have already noted encountering this rare nightjar at Anse la Raye on the leeward coast of St. Lucia (Auk, Vol. XLVI, 1929, p. 525), though I merely heard the bird on this occasion. It was, therefore, gratifying when on July 1 of the present year I received from Mr. Stanley John of Castries, who acted as my guide during my stay on St. Lucia, a fine female which he secured at Petit Anse on the windward coast of the island. The specimen was taken on June 26, 1932. He also found two broken eggs "laid on the ground in the center of a forest trail." The shells were white, spotted with light brown.

Nephoecetes niger niger (Gmelin). On May 14, 1929, I observed several Black Swifts in company with Lesser Antillean Swifts (*Chaetura acuta*) on the slopes of Morne Grand Magasin in southern St. Lucia. I secured one specimen (A. N. S. P. 86401). This constitutes the first record of this species from St. Lucia. I also observed many Black Swifts at sea level near Georgetown, St. Vincent, on June 23, 1929, securing a specimen (A. N. S. P. 86402). I do not believe that *Chaetura acuta* occurs on St. Vincent where its place is taken by the very distinct *C. brachyura*, but a closely related species, *C. cinereiventris*, is found on Grenada.

Cichlherminia herminieri sanctae-luciae (Selater). This form is very close to *C. h. herminieri* of Guadeloupe and also resembles *C. h. lawrencii* of Montserrat, a rare bird which I have collected recently. All three forms should, in my opinion, be regarded as subspecies. With a field acquaint-

ance of over one hundred and eighty of the one hundred and ninety odd resident genera of West Indian birds, I may say that no West Indian birds are shyer or more difficult to collect than are the Lesser Antillean Forest Thrushes. None was collected in 1927 but one female was taken on May 31, 1929 in the vicinity of the Piton Flore in northern St. Lucia.

Troglodytes mesoleucus (Selater). This wren was found only in the vicinity of Le Marquis, a settlement on the windward side of the island almost directly across from Castries, two specimens being collected; none was found in 1927. The St. Vincent Wren was also discovered in 1929, occurring sparingly on the windward coast of that island. The only Lesser Antillean wrens that are common or abundant are those from Dominica and Grenada.

Molothrus bonariensis minimus Dalmas. Noted by Dr. Danforth at Vieux Fort near the southern extremity of the island (Auk, Vol. XLIX, 1932, pp. 96-97). I did not find this cowbird on St. Lucia but encountered a few and collected a specimen (A. N. S. P. 86493) just outside of Kingston, St. Vincent, constituting a new record for that island. The species has now been recorded in the Lesser Antilles from Barbados, Grenada, where it is locally common, Carriacou, St. Vincent and St. Lucia. It seems to be extending its range northward rather rapidly.—JAMES BOND, *Academy of Natural Sciences, Philadelphia*.

Some Records for Costa Rica.—*Puffinus griseus*. SOOTY SHEARWATER.—On May 18, 1932, while aboard a small launch, sixty miles South of Puntarenas; and about three miles off shore, a Sooty Shearwater alighted on the water ahead of the launch; on being flushed, it again settled near the side of the boat, permitting close examination. A few weeks later, so the captain of the launch reported, a bird of the same species came aboard one night, in nearly the same latitude.

Crotophaga ani. SMOOTH-BILLED ANI.—For many years I have been on the lookout for this species, but it was not until December 26, 1931, that a small colony was met with, along the Rio Coto, about ten miles above where that river flows into the Gulf of Dulce, and several examples obtained. The Grooved-billed Ani (*Crotophaga sulcirostris*), so common in many parts of Costa Rica, seems entirely missing from the southwestern coast and I did not even find it in the interior at El General.

Charadrius collaris. COLLARED PLOVER.—A mated pair in company of a pair of Belding's Plover (*Pagolla w. beldingi*), were shot on the beach at Port Uvita; and another male was taken the following day within a few yards of the first pair. Apparently, the first record for the Collared Plover on the Pacific coast of Costa Rica.

Nephoecetes niger borealis. BLACK-SWIFT.—At Port Uvita (Pacific coast) during the late afternoon of May 15 and 16, 1932, hundreds of Black Swifts were seen, in company of many Barn Swallows, progressing northward along the beach. Many of the swifts flew so low that they could easily have been killed. I have noted the Black Swift on but one other occasion during my residence of twelve years in Costa Rica.

Tangara guttata eusticta. A mated pair was found in the hills, back of the village of El General, at an altitude of 2600 ft. The male was shot; the female seen carrying nest material. The species was not previously found by me on the Pacific slope of Costa Rica.—AUSTIN SMITH, *San José, Costa Rica*.

RECENT LITERATURE.

Sutton's 'The Birds of Southampton Island.'—As most of our readers are aware Mr. George Miksch Sutton spent a year, 1929–1930, on Southampton at the upper end of Hudson Bay devoting his attention mainly to a study of the bird life, and the results of his work are now presented.¹ The itinerary, bibliography and maps are, we presume, presented in another volume, the one before us being devoted to an account of the birds with a brief historical résumé of previous explorations on the island or the adjacent waters which serves to show how very little was known of the bird life and what an untouched field the author had before him.

That he made good use of his opportunities even a cursory examination of his report will show. Under each of the sixty-five species found on Southampton he presents a detailed series of observations taken from his diaries throughout the year, arranged under spring records, annual routine and fall records, with explanations of the Eskimo names of the birds, the author's conclusions as to the status of each form, a summary of the records of other explorers and an account of the coloration of the soft parts of the specimens collected. The whole forms one of the most notable contributions that has ever been made to the ornithology of the American arctic.

The intimate accounts of the birds and their activities are delightful reading and the careful studies of migration, breeding habits, molt, etc., are an important contribution to science.

The author includes brief mention and discussion of the occurrence of species recorded by others from Southampton or adjacent regions but which he did not personally see and includes in the same way under separate headings references which, as he points out, are erroneous identifications of species that he considers elsewhere under their proper names.

Mr. Sutton makes a valuable contribution to our knowledge of the Geese. He found that two forms bred regularly on Southampton Island, the Lesser Canada Goose (*Branta canadensis leucopareia*) and Hutchins's Goose (*B. c. hutchinsi*), each with peculiar nesting habits, etc., which leads him to follow Taverner in regarding them as specifically distinct. True *B. c. canadensis* occurs also but only casually although it has been known to nest. Our author is inclined to think that such birds are mated pairs which have been blown here by storms from southwestern Hudson Bay or Baffin Island and that their presence therefor does not affect the re-

¹ The Exploration of Southampton Island, Hudson Bay | By George Miksch Sutton | Sponsored by Mr. John Bonner Semple | 1929–1930 | Part II, Zoology | Section 2. The Birds of Southampton Island | By George Miksch Sutton | Mem. Carnegie Museum. Vol. XII. Part II, Sect. 2. Pittsburgh, May 31, 1932. Pp. 1–275; ppl. XI–XXIV.

lationship of the regular summer resident forms. He regrets the use of the English name "Hutchins's" for *B. c. hutchinsi*, as adopted in the new 'Check-List,' thinking that "much confusion is certain to result" because this name was formerly used for the bird now known as the "Lesser Canada Goose." However since the Latin name "*hutchinsi*" had to be transferred from one to the other it seemed better to the Committee to carry the corresponding English name along with it; such situations are provoking and confusion will result either way.

The account of the molt of the Ptarmigan, the courtship behaviour of the ducks and plover, and the nesting habits of numerous species are replete with interest. The various call notes and songs of many of the birds are represented by the syllabic method which would have been of still greater value had the accented syllables been marked.

Mr. Sutton very wisely adopts the nomenclature of the A. O. U. 'Check-List' throughout, making several suggestions in foot notes where his experience causes him to differ from the conclusions of the Committee. His suggestion regarding the Canada Geese has already been mentioned, and he is doubtless right. With regard to the distribution of *Lagopus rupestris kelloggae* we wonder whether he has consulted Taverner's paper on these birds. As to his suggestion that the name "Herring Gull" should be "American Herring Gull" in order to distinguish it from the European bird, the Committee realized that to carry out this plan consistently "American" would have to be added to so many names that it was impracticable. We have our Herring Gull and Redstart and the English have theirs; we have our Catbird and the Australians have theirs etc. and "American" has been used in the 'Check-List' only where some qualifying name was needed to distinguish the bird in question from another species that appeared in the List.

In supplementary pages of his report Mr. Sutton discusses Life Zones, Migration, Food, and Destructive Agencies. He finds Southampton to be entirely in the Arctic Zone. Of the sixty-five species and subspecies recorded, forty are summer residents; seven, residents; eight, "migrants" [= transients]; and ten accidentals. He finds the island to be on the direct line of flight of birds breeding on the Melville and Boothia Peninsulas and is convinced that many species passing to the north or northwest travel along the west shore of Hudson Bay and never touch Southampton.

The plates consist of many admirable photographs of birds and nests and three color plates from paintings by the author who is as well known as a bird artist as he is an ornithologist. One is devoted to beautiful sketches of the downy young of various species and the others to habitat paintings of the Rock Ptarmigan, White Gyrfalcon, Brant and Blue Goose.

We congratulate Mr. Sutton upon a well conceived expedition successfully carried out, and upon an excellent report, and Mr. Semple upon his support of such a worthy enterprise.—W. S.

Bent's 'Life Histories of the Gallinaceous Birds.'—Mr. Bent's great series of Life Histories goes steadily on. Eight volumes have been devoted to the water birds and in the ninth,¹ now before us, he covers the Grouse, Quail, etc., and the Pigeons.

The method of treatment follows the same excellent plan established in the earlier volumes and an astonishing amount of information is presented, including judicious extracts from the published literature, which the author seems thoroughly to have mastered, and original matter supplied by his many correspondents and drawn from his own wide experience.

The problem of subspecies, which were but few in number among the water birds, had to be solved in the present volume and the author's method is "to give as full a life history as possible of the best known subspecies and to avoid duplication by writing briefly of the others," giving only their characters, ranges and any peculiar habits. This seems eminently satisfactory; indeed no other method could be tolerated; subspecies differ from one another by every degree of difference and to ignore them all would be to omit birds that are generally recognized by the public as distinct "kinds" while to write fully of every race would involve endless duplication. A work of this sort must adopt degree of difference as its criterion even though our technical nomenclatural divisions are based on presence or absence of intergradation.

The nomenclature follows the new A. O. U. 'Check-List'—another sensible practice in a work of this sort. Mr. F. C. Lincoln is largely responsible for the compilation of the ranges and Drs. C. W. Townsend, Tyler, Gross and A. A. Allen have contributed biographies, while the late F. C. Willard arranged the data on egg dates and measurements.

The illustrations are mainly of nests and young birds but a number represent adults also; they are almost all from photographs and are reproduced in half-tone and printed on both sides of heavy plate paper. Perhaps the most striking are those of the Ptarmigan and the Sage Hen in display, and the fighting Sharp-tailed Grouse and Prairie Chickens.

Mr. Bent reminds his readers that this series of volumes constitutes a coöperative work and if anyone "fails to find anything that he knows about the birds he can blame himself for not having sent in the information!"

We realize the difficulty that the author has faced in trying to find a term that would cover all the birds included in this volume but the use of the word "Gallinaceous" to cover both the Galliformes and the Columbiformes seems to be stretching it beyond the usually accepted limits; indeed the 'Century Dictionary' in defining it distinctly excludes the pigeons. Once more we take pleasure in congratulating Mr. Bent upon the completion of another step in his gigantic undertaking.—W. S.

¹ U. S. National Museum Bull. 162 | Life Histories of North American Gallinaceous Birds | Orders Galliformes and Columbiformes | By Arthur Cleveland Bent | Taunton Massachusetts | (seal) | Smithsonian Institution | Washington | D. C. Pp. i-xi + 1-490 pl. 1-93. Price \$1.00. Superintendent of Documents, Government Printing Office, Washington, D. C.

Bowen on the Life Zones of Africa.—In the first installment of a report¹ on the A. Blaney Percival collection of East African birds recently acquired by the Academy of Natural Sciences of Philadelphia, Mr. W. Wedgwood Bowen presents his conclusions on the life zones of Africa based upon his personal experiences and upon a study of extensive collections and of the literature bearing on the temperature and contour of the continent.

Dr. James P. Chapin, who has published upon this subject, decided that life zones in Africa were largely ecological and that "the whole question of plant and bird distribution in Africa *** goes back to the distribution and abundance of rains." To this Mr. Bowen does not agree but decides that "there are in Africa climatic zones comparable to those which Dr. Chapman has demonstrated in South America."

He draws his own zonal map recognizing as primary divisions the Tropical, Subtropical, Temperate, and Alpine Zones and lists characteristic species for each concluding with the statement that "a large part of the Ethiopian region possesses a climate which is subtropical rather than tropical."

Our author would seem to have made a good point though the accuracy of his conclusions must rest upon a careful checking of the distribution of the African species which cannot be done in the space of a review. It would seem strange if the underlying principle which governs distribution in South America did not also pertain in Africa.

As Mr. Bowen points out most of the subdivisions recognized by Chapin are perfectly valid and except for some changes in boundary lines they remain the same in each scheme. It is the underlying principle that is novel.

In addition to his discussion of life zones Mr. Bowen lists the localities represented in the Percival collection and the number of skins from each, the total number being 6,287. He also gives a list of the collectors. This paper is preliminary to a systematic discussion of the more interesting specimens in the collection.

In another paper² he lists some forty-three species of Angolan birds obtained by an expedition from the Academy of Natural Sciences of Philadelphia, in 1930, consisting of Harold T. Green and John Jonas, whose primary object was to obtain specimens of the Giant Sable Antelope. Notes on plumages and some field notes by the collectors are added.—W. S.

Hellmayr on the Birds of Chile.—This report³ was originally intended to cover the collection of some 1500 specimens brought back by the Mar-

¹ Notes on the A. Blaney Percival Collection of East African Birds,—Part I. Proc. Acad. Nat. Sci. Phila., LXXXIV. Pp. 259-280, June 30, 1932.

² Angolan Birds Collected During the Second Gray African Expedition—1930, Proc. Acad. Nat. Sci., Phila., LXXXIV, pp. 281-289, June 30, 1932.

³ Field Museum of Natural History | Publ. 308 Zool. Ser. | XIX. The Birds of Chile | By | Charles E. Hellmayr | Associate Curator of Birds. | Chicago, U. S. A. June 13, 1932. Pp. 1-472. (No illustrations.)

shall Field Chilean Expedition of 1922-1924, conducted by W. H. Osgood, H. B. Conover, and Colin C. Sanborn. Later however it was extended to include all available information on Chilean birds and thus becomes a monograph of Chilean ornithology.

The limits of the country as here considered include all of the province of Tacna on the north and extend southward to latitude 48° S., practically the southern limit of the "Valdivian" forest. Prefatory to the main text are presented a historical sketch of Chilean ornithology from the publication of Father Molina's "Saggio," in 1782, to the present time; a discussion of climatic conditions, which separate Chile into three regions: the sterile northern portion, from Atacama northward; a central area (31°-38°), and the humid forested region at the south. The first of these belongs to the Tropical Zone and the two latter to the Temperate which here comes down to sea level. Another zone the "Puna," corresponding to the "Paramo" of the northern Andes, occupies the upper parts of the high mountains. Migration, our author tells us, is of three sorts. Temperate and Puna birds come down to the valleys, other Puna forms go north to Bolivia, and forest birds move more or less northward.

The systematic portion of the report covers 335 species and subspecies. Under each is given a list of Chilean references, the range in Chile, a list of specimens obtained by the expedition, if any, a discussion of relationship to allied forms, and field notes by members of the expedition.

Dr. Hellmayr has given us a most useful work—the first complete summary of the Chilean avifauna, which will take its place along with Chapman's monographs of the birds of Colombia and Ecuador, Todd and Carriker's work on the birds of Santa Marta and Mrs. Naumburg's on the Matto Grosso avifauna.—W. S.

Stone, on the 'Birds of Honduras.'—In the summer of 1930 an expedition in the interests of the Academy of Natural Sciences of Philadelphia visited Honduras with the highlands along the southern border as its chief objective. It was under the leadership of James A. G. Rehn, Secretary of the Academy, who was accompanied by John T. Emlen, Jr. and C. Brooke Worth, members of the Delaware Valley Ornithological Club. The collection of bird skins made by the two latter numbered 569 skins representing 191 species and subspecies. It has been studied by Dr. Witmer Stone and his report¹ upon the material has just appeared. In view of the scattered nature of the literature bearing on Honduran birds it seemed to the author worth while to add such species as had been previously recorded from the country but not obtained by this expedition and to quote all recorded localities for each form so that the list, containing 420 species and subspecies, includes all the birds known from Honduras to date.

¹ The Birds of Honduras with Special Reference to a Collection Made in 1930 by John T. Emlen, Jr., and C. Brooke Worth. By Witmer Stone, Proc. Acad. Nat. Sci., Phila., LXXXIV, 1932 Aug., 18, pp. 291-342.

Mr. Rehn has contributed a detailed account of the several localities where collecting was carried on while Mr. Emlen has added field notes on many species. The mountains of Honduras have for the most part been a terra incognita to the ornithologist and while a number of the birds found there had recently been described from the San Salvador mountains to the south, four new forms were represented in the present collection. Three of these were named by Dr. Stone in a previous paper and one *Troglodytes rufociliaris rehni* is described in the present report. Besides collections made at San Juancito and Cantarranas in the mountains some interesting material was also obtained on the coast at Lancetilla.—H. W. F.

Huber on Nicaraguan Birds.—While the collection of birds made by Messrs. J. Fletcher Street and Wharton Huber for the Academy of Natural Sciences in Nicaragua, in 1922, had been studied by the latter and the novelties described, no complete account of the material has appeared until now.¹

Collecting was carried on principally at the Eden Mine, 14° N., 84° 26' W. (1500–2500 ft.) which has since been abandoned, at Santa Rosita on the Banbana River, and at the Great Falls of the Pis Pis River. A series of 625 skins was obtained representing 180 species and subspecies.

Besides listing the specimens Mr. Huber has added his field observations and some discussion of the relationship of the forms with notes on nests and eggs of many of them. The report forms a valuable addition to the literature of Nicaraguan ornithology.—W. S.

Zimmer on Peruvian Birds.—Carrying on his studies of the Peruvian collections in the American Museum of Natural History, Mr. Zimmer has published four papers² dealing with several Formicariian genera. Many new forms are described and old ones discussed in the light of the abundant additional material now available at the Museum, and naturally a number of extra-limital species and races are considered. Following the plan adopted by Dr. Chapman and others, in these reports, all specimens examined are listed and relations to allied forms are explained. This series of papers forms an invaluable contribution to our knowledge of the difficult family of Ant-birds. New forms are proposed in the genera *Myrmotherula* (7), *Microrhopias* (1), *Formicivora* (4), *Hypocnemoides* (1), *Myrmoborus* (2) and *Myrmeciza* (3).—W. S.

¹ Birds Collected in Northwestern Nicaragua in 1922. By Wharton Huber, Proc. Acad. Nat. Sci. Phila., LXXXIV, pp. 205–249, June 30, 1932.

² Studies of Peruvian Birds. III. The Genus *Myrmotherula* in Peru with Notes on Extralimital Forms. Part I. By John T. Zimmer. Amer. Mus. Novitates, No. 523, April 26, 1932, pp. 1–19.

Ibid. No. IV. The Genus *Myrmotherula* in Peru. Part 2. Amer. Mus. Novitates, No. 524, April 26, 1932, pp. 1–16.

Ibid. No. V. The Genera *Herpsilochmus*, *Microrhopias*, *Formicivora*, *Hypocnemis*, *Hypocnemoides*, and *Myrmochanes*. Amer. Mus. Novitates, No. 538, June 15, 1932, pp. 1–27.

Ibid. No. VI. Genera *Myrmoborus* and *Myrmeciza*. Amer. Mus. Novitates, No. 545, June 22, 1932, pp. 1–24.

Farley on 'Birds of the Battle River Region' (Alta.)—The region covered by this well gotten-up list¹ comprises an area of 200 x 40 miles in Central Alberta with which the author is evidently well acquainted. After a "foreword" in which the country is briefly described, with some small photographs of typical spots, the list of birds comprising 238 species and subspecies is presented, usually with brief annotations, though in the case of a few species much longer notes are attached.

Only two forms of Canada Goose seem to pass through this country; *Branta c. canadensis* and *B. c. leucopareia*, and the Blue Goose is not recorded. The Goshawk is regarded by the author as "the most destructive bird of prey in the west, and is the only one that I habitually shoot," while of Swainson's Hawk he says "a ruthless slaughter of these unwary hawks is being constantly carried on by thoughtless and cruel hunters * * * grim reminder of the terrible ignorance of man and his utter disregard for the country's valuable wild-life"; he moreover has no criticism of the Marsh Hawk which Major Brooks, a little farther west, condemns so heartily.

The Crow has vastly increased since the author's arrival in Alberta in 1892 and he regards it as a great menace to the ducks through its destruction of their eggs and young, especially on reservations. His plea that "a whole hearted policy on the part of Canada and the United States for the destruction of Crows would help materially in bringing the ducks back to their former numbers" seems to be a rather extravagant statement. Crows, as we have pointed out, are as useful as they are harmful in various parts of the United States and extermination is not the answer in such cases but rather control in areas where the birds are a nuisance.

Mr. Farley wisely follows the A. O. U. 'Check-List' as to nomenclature and sequence but insists on dropping the apostrophe in the case of personal names. This excellent pamphlet will go far to educate the people of Alberta in the value and interest of their birds.—W. S.

Wetmore on Hummingbirds, Swifts and Goatsuckers.—'The National Geographic Magazine' has in the past published some notable series of colored plates of birds which have been of the greatest educational value and it now begins a still more pretentious undertaking: the reproduction in colors of paintings by Major Allan Brooks illustrating some 500 familiar land and sea birds of North America, to be accompanied by suitable text by notable ornithologists. The first of these articles² is by Dr. Alexander Wetmore describing his experiences with hummingbirds, swifts and goatsuckers in various parts of the world, and detailed accounts

¹ Birds of the Battle Creek Region With Notes on their Present Status Migrations, Food Habits and Economic Value. By Frank L. Farley. Camrose, Alberta. First Edition, July, 1932. Published by the Institute of Applied Art, Limited. 10042, 109th St., Edmonton, Alberta. Price 50 cents.

² Seeking the Smallest Feathered Creatures. By Alexander Wetmore. Hummingbirds, Swifts, and Goatsuckers. By Allan Brooks. Nat. Geog. Mag., LXII, No. 1, July, 1932, pp. 64-89.

of the habits and distribution of the twenty-six North American species beautifully depicted by Major Brooks. This series will form a work which all interested in American ornithology cannot afford to be without. Besides Major Brooks' paintings, which are attractively grouped on tinted backgrounds, there are a number of interesting photographs of young swifts and humming-birds.—W. S.

Legendre's Monograph of the European Titmice.—This publication¹ forms Vol. VI, of the 'Encyclopedie Ornithologique' being published by Paul Lechevalier and Sons. It considers in much detail the various species of titmice found in Europe with the numerous geographical races that have been recognized by recent authorities. There are descriptions, distributions, accounts of habits, nests and eggs etc., together with keys for determination, maps, photographs of several of the species, and a colored plate of four of the species of *Parus*. The limits of the family Paridae are somewhat extended by including the Kinglets. The five genera recognized as belonging to the group are *Parus*, *Aegithalos*, *Anthoscopus*, *Regulus*, *Panurus* and eighty-three forms are recognized while eight supposed hybrids are described.

The paper is well prepared and forms a valuable contribution to our knowledge of a group of birds to which the author has given much attention.—W. S.

The Indiana Audubon Year Book.—This valuable publication contains a vast amount of notes on Indiana birds besides much information of wider interest. Prominent in the latter category may be mentioned a biographical sketch, by Dr. B. W. Evermann, of the veteran Indiana ornithologist, Amos W. Butler, with portrait and bibliography; an extensive paper on Bird Parasites both internal and external by George Zebrowski; Birds of Prey of Mercer Co., Ohio, by Paul Forsthoefel; a short paper on Bird Life of Nova Scotia by Mrs. Henry Watterman; and Racing Homing Pigeons by Harry M. Gould. Much information on Robins has been compiled by Dr. Earl Brooks and Arthur M. Grass, the latter estimating on several careful counts that the total number of Robins' nests in the state each year is over eight million!

We congratulate the Audubon Society upon another excellent publication.—W. S.

A British Bird Census.—Our colleague W. B. Alexander has published² the results of both winter and summer counts of the bird inhabitants of a 125-acre farm near Oxford, England. The results are of comparative value with those obtained in the Eastern United States, with which they

¹ Monographie des Mesanges d'Europe par Marcel Legendre. Encyclopedie Ornithologique. Paul Lechevalier & Fils Editeurs 12, Rue de Tournon, Paris—VIe. 1932. Pp. 1-121, 15 figs., 5 planches.

² The Bird Population of an Oxfordshire Farm, Journ. Animal Ecol. 1, No. 1, May 1932, pp. 58-64.

substantially agree. The number of birds found was about 2 to 3 per acre at either season. This result shows that remarks as to the greater abundance of birds in England compared with this country have been prompted by enthusiasm rather than based on facts. The number of birds seen about a greenery embowered residence is no safer criterion of the average population of village, wood, and field in England than it would be in the United States. We can thank Mr. Alexander for debunking another portion of gush. The average number of birds decreased steadily through the winter, and the data put in another form—combined weight of the birds—show the same decline to be true of the actual quantity of bird life present.—W. L. M.

Shorter Articles.

Berlepsch, Hans Freiherr von.—Twenty-fourth report on bird study and protection at Seebach. (In German.)

Grote, Hermann.—On the Avifauna of Novaya Zemlaya. (Verh. Ornith. Ges. Bay. XIX, Heft 4, 1932, p. 57–584.)—An annotated list of species procured on the island by G. Gorbunow. (In German.)

Naumburg, Elsie M. B. Three New Birds from Northwestern Brazil. (Amer. Mus. Novitates. No. 554, August 22, 1932.)—*Nothura maculosa cearensis* (p. 1) Ceara; *Columba picazuro marginalis* (p. 3) and *Crypturellus tataupa septentrionalis* (p. 6) Corrente, Piahy, Brazil all collected by Emil Kaempfer.

Stresemann, Erwin.—Notes on the Systematics and Distribution of some Swifts (Collocalia) of Malaysia and adjacent subregions. (Bull. Raffles Mus., Singapore, Straits Settlements, No. 6, December, 1931.)—Three new forms are described. Representatives of four species of these interesting swifts breed in the Malay Peninsula; two in Borneo; three in Sumatra; two in central Celebes and three in Java where three different races of *C. francica* occur, the only instance where more than one race of a species occurs on an island. It now appears that the white edible nest which has such a high commercial value is the product of *C. francica* and not *C. fuciphaga* the latter and all other larger species making a black nest in which the saliva is mixed with moss and feathers.

Wetmore, Alexander.—Birds Collected in Cuba and Haiti by the Parrish-Smithsonian Expedition of 1930. (Proc. U. S. Nat. Mus., 1932, pp. 1–40.)—This expedition, under the direction of the late Lee H. Parrish, brought back to the U. S. National Museum a collection of 558 birds from Gonave Island, Haiti and from Navassa Island, Petit Gonave, Grande Cayemite, Petit Cayemite and Isle a Vache, some of them difficult of access and from which little or no material was available. Dr. Wetmore lists the species obtained from each island as well as two species *Dendroica v. virens* and *Vireo olivaceus barbatula* not hitherto taken in Haiti. The

Ground Dove from Navassa and the Bullfinch from Isle a Vache have previously been described as new. There are a number of interesting scenic illustrations and an annotated list of the entire collection.

The Ornithological Journals.

Bird-Lore. XXXIV, No. 4. July-August, 1932.

The Martin Quartet of 'The Hummocks.' By Elizabeth A. Oehlen-schlaeger.

The Flight of the Swifts. By Myron F. Westover.—This is a most important contribution to the history of the Chimney Swift. For some time the theory has been advanced that this bird uses its wings alternately and a recent contributor to 'The Auk' went so far as to refer to this as "a well known fact." Mr. Westover being in doubt spent much time and energy in attempting to secure motion pictures of the bird in flight and finally succeeded. His films, shown at the American Museum in "slow motion," demonstrated that both wings were used simultaneously just as in other birds, the apparent alternating beats being purely an optical delusion.

Photographing Meadowlarks in Colorado. By Kenneth Gordon.

On the Roof. By F. R. Flickinger and L. D. Hiatt.—Nighthawks nesting on the roof of an office building in Toledo, Ohio.

Birds of a Huckleberry Patch. By Blanche Miller.—In the Craig Mountains, Idaho.

The Thick-billed Parrot is the subject of the excellent color plate by Weber while Dr. Allen presents a life-history of the Scarlet Tanager with his usual admirable photographs.

The Condor. XXXIV, No. 4. July-August, 1932.

John Eugene Law. By Joseph Grinnell.—With portrait and bibliography.

A New Race of Bob-white from Costa Rica. By H. B. Conover.—*Colinus leucopogon dickeyi* (p. 174).

Food Habits of Southern Wisconsin Raptors Part I. Owls. By Paul L. Errington.

The Maryland Hawk Bounty. By A. B. Howell.—In a little over ten years \$62,543 has been spent for the destruction of 125,086 hawks, the amount during the last year exceeding the receipts for hunting licenses! As the author says: "One of our oldest states—fitted to profit by expert advice has permitted and encouraged the destruction of thousands upon thousands of beneficial hawks breeding in every eastern state north of the Mason and Dixon Line."

There is an interesting illustration of a hybrid *Phasianus* × *Dendragapus*.

The Wilson Bulletin. XLIV, No. 2. June, 1932.

Winter Starling Roosts of Washington. By E. R. Kalmbach.—A roost of thousands now exists on buildings in the heart of the Capital

similar to those long established in Philadelphia and other cities. Banding of some 5000 of these birds and 120 returns show that they travel north to central Pennsylvania and New York with two records for Canada while a few birds go southwest into Virginia.

Curvature of Wing and Flapping Flight. By William Brewster Taber, Jr.

Harlan's Hawk. By Normen A. Wood.—Claim is made that the so-called Harlan's Hawk is a full species and not a race of the Red-tail. The author also agrees with most others who have studied the bird that Audubon's plate represents a melanistic Red-tail. If this be so it is obvious that the name "*harlani*" falls into the synonymy of *borealis* and the Harlan's Hawk as described by Mr. Wood is in need of a name.

Snakes versus Birds: Birds versus Snakes. By J. E. Guthrie.—A discussion of birds that eat snakes and snakes that eat birds, with lists of species.

Bird-Banding.—III, No. 3. July, 1932.

Tree Sparrow Movements on Cape Cod. By O. L. Austin, Jr.

Indiana Bronzed Grackle Migration. By S. E. Perkins III.—Comparison of winter habitats with those of the Robin and Mourning Dove as shown by recaptures of banded birds.

Study of Two Nests of the Black-throated Green Warbler. By M. M. and L. B. Nice.

Are Nesting Territories always Available for Returning Juvenile Song Sparrows. By C. L. Whittle.

Oölogist. XLI X, No. 7. July, 1932.

Bird Notes from an Auto Drive through Niles and Alameda Canyons, Calif. By W. Otto Emerson.

The Cardinal.—III, No. 4. July, 1932.

Notes on the Breeding Birds of Fayette County, Pennsylvania. By Thomas D. Burleigh.

Heath Hen Record in Pennsylvania. Anonymous.—Extract from the 'Travels of the Marquis de Chastellux' telling of a Heath Hen served on the table at a tavern at Bethlehem on December 10, 1782.

Swans at Presque Isle. By Bayard H. Christy.

The Migrant.—III, No. 2. June, 1932.

Spring Bird Census for Tennessee.—At five stations.

Facts about Eagles in Tennessee. By A. F. Ganiel.

Iowa Bird Life. II, No. 2. June, 1932.

Local Check-Lists. By T. C. Stephens.—An excellent suggestion; if we had adequate local lists the compilation of ranges and abundance for an A. O. U. Check-List would be an easy matter!

Many valuable notes on Iowa birds; but the reviewer of "recent bird books" can hardly have read the first book reviewed very carefully!

The Gull. XIV, Nos. 5, 6, 7, and 8. May to August, 1932.

Winter Bird Visitors at Davis, Calif. By Tracy I. Storer. (May).

Winter Birding in Monterey. By C. A. Bryant. (July).

Birds at the Pinnacles. By M. I. Compton. (August).

Also reports on numerous field trips by the Audubon Association of the Pacific.

Aviculture. IV, No. 7. July, 1932.

The Fairy Blue Bird. By Karl Plath.—With color plate from painting by the author.

Notes on various birds in captivity.

Aviculture. IV, No. 8. August, 1932.

The Blue-naped Coly. By Karl Plath.—With colored plate from painting by the author.

A Few Notes on Foreign Collections. By C. C. Broadwater.

A Paradise for the Bird Lover. By R. C. Cross.—Account of I. D. Putnam's aviaries in San Diego, Calif.

The Ibis. (13th series) II, No. 3. July, 1932.

The Birds of South-West Transbaikalia, Northern Mongolia, and Central Gobi. Part II. By E. V. Koslova.

The Origin of the Melanistic Pheasant. By D. Seth Smith.—Considers it a mutant and not a cross between *P. colchicus* and *versicolor*.

Resident and Migratory Birds of North Rona, the remotest Scottish Island. By T. H. Harrison.—Interesting notes on birds observed on this little visited and now uninhabited island.

Observations on Nesting and Breeding Habits of Birds near Ilorin, Nigeria. By P. W. T. Boughton-Leigh.—Descriptions and colored plate of eggs of some thirty species.

On Some Larks of the Kashmir State. By Hugh Whistler.

Notes on some Birds of Barro Colorado Island, Canal Zone. By R. E. Heath.

Taxonomic and Field Notes on some Birds of North Eastern Tanganyika Territory. Part I. By W. L. Sclater and R. E. Moreau.

Some Petrel Notes. By Gregory M. Mathews.

British Birds. XXVI, No. 1. June, 1932.

The Ivory Gull in Spitzbergen. By C. T. Dalgety.

New British Birds and Alterations to the British List. By H. F. Witherby.

The Tring Collection of Birds. By H. F. Witherby.

British Birds. XXVI, No. 2. July, 1932.

Some Breeding Habits of the Rook. By G. K. Yeates.

The Food of the Sparrow Hawk. By J. H. Owen.

Some Observations on the Notes and Behaviour of the Green Sandpiper when Flushed. By G. C. S. Ingram and H. M. Salmon.

Recovery of Marked Birds.

British Birds. XXVI, No. 3. August, 1932.

The Great Crested Grebe Enquiry. By T. H. Harrison and P. A. D. Hollom.—With the aid of over a thousand collaborators about a thousand lakes were visited in England and Wales and an accurate census of breeding pairs made for every county. We cannot think of any area in the United States where a thousand breeding places for grebes or any sort of water fowl have escaped draining!

Bulletin of the British Ornithologists' Club. CCCLIII. November 4, 1931.

Annual meeting of the Club.

H. Lynes describes five new forms of *Cisticola*.

Account of his trip to the Himalayas by Herbert Stevens.

W. Shore Baily describes Harris's Sparrow nesting in his aviary.

Cyornis poliogenys vernayi (p. 24) described from India, by H. Whistler; *Aquila chrysaetus hodgsoni* (p. 25) for *A. daphanea* Hodgs. by C. B. Ticehurst; *Quoyornis leucurus mimika* (p. 25) Dutch New Guinea, by G. M. Mathews; and *Ploceus nicolli*, (p. 26) Amani, Tanganyika, by W. L. Selater.

G. M. Mathews also proposes *Colea* for *Coleia* preoccupied, and *Pherocraspedon* for *Mathewsiella*, preoccupied (p. 25).

Bulletin British Ornithologists' Club. CCCLIV. December 1, 1931.

E. C. Stuart Baker described his recent trip to Labrador.

Cypseloides fumigatus major (p. 36) is described by Lord Rothschild from Tucuman, Argentina; *Otocompsa jocosa abuensis* Mt. Abu, India, *O. j. provincialis*, Kumaon Bhabar, India and *Leucocircus pectoralis vernayi*, Jeypore Prov., India (p. 40) by H. Whistler; and *Botaurus poiciloptilus matheusi* (p. 41), New Caledonia, by M. Hachisuka.

Bulletin British Ornithologists' Club. CCCLV. December 30, 1931.

Chairman's address by Stanley S. Flower,—dealing with a review of work and the longevity of birds.

David Bannerman has an interesting account of dead migrant birds picked up on Roque del Este eastern Canaries by Hugh Cott.

Bradypterus brachypterus moreau (p. 57) Amani, Tanganyika is described by W. L. Selater; *Phylloscopus trochiloides ludlowi* (p. 62), Kashmir, Garhwal, by H. Whistler and *Pterodroma externa tristani* (63), Tristan da Cunha, by G. M. Mathews.

Bulletin British Ornithologists' Club. CCCLVI. January 30, 1932.

R. R. Graham discusses, "the Part played by the Emarginated Feathers and the Alula in the Flight of Birds."

Caprimulgus affinis kasuideri (p. 81) is described from Savu Island by

M. Hachisuka; and *Sylvia undata maroccana* (p. 82), Morocco, by Lord Rothschild (and renamed *tingitana* in the next issue, p. 105).

Further discussion and exhibition of hybrid pheasants.

Bulletin British Ornithologists' Club. CCCLVII. March 7, 1932.

Devoted mainly to a discussion and exhibition of abnormal pheasants.

Hyliota australis usambara (p. 104), Amani, Tanganyika, is described by W. L. Sclater and *Ploceus infortunatus burmanicus* (p. 105) by C. B. Ticehurst.

Bulletin British Ornithologists' Club. CCCLVIII. March 24, 1932.

Rhinomyias ruficauda isola (p. 110) Mt. Dulit, Borneo, and *R. r. basilanica* (p. 110) Basilan, are described by M. Hachisuka; and *Emberiza affinis gambiensis* (p. 111), Gambia, by D. Bannerman.

Bulletin British Ornithologists' Club. CCCLIX. April 30, 1932.

R. C. Murphy describes the 'Ornithology of the Humboldt Current' as observed on the coast of Peru.

P. F. Bunyard discusses at length the nesting of the Solitary Sandpiper in Labrador.

Fregattornis grallaria tristanensis (p. 123), Inaccessible Island, Tristan da Chuna Group, is described by G. M. Mathews.

Bulletin British Ornithologists' Club. CCCLX. May 28, 1932.

G. Carmichael Low reviews lead poisoning of ducks in the United States.

A. L. Butler describes a hybrid hummingbird, *Damophila* × *Amazilia*, and the hitherto unknown female of *Timolia*.

G. M. Mathews describes *Pealeornis maoriana* (p. 132) gen. et. sp. nov., from Banks Peninsula, N. Z.

Bulletin British Ornithologists' Club. CCCLXI. June 28, 1932.

Lord Percy discusses powder down patches, and E. F. Stead, the Muttonbirds of New Zealand.

W. L. Sclater describes, *Ortygospiza atricollis fuscata* (p. 142) and *Anthuscopus ansorgei rhodesiae* (p. 143) from northern Rhodesia, and *Francolinus coqui lynesii* (p. 143), Belgian Congo; and Percy R. Lowe, *Fringillaria capensis vincenti* (p. 44), Portuguese East Africa.

The Oölogists' Record. XII, No. 2. June 1, 1932.

Ornithological Excursions in a Hungarian Puszta. By J. Schenk.—A prairie like region.

Notes from Trinidad and the Main. By C. F. V.

Avicultural Magazine. (II) IV, Nos. 6, 7 and 8. June to August, 1932.

Color Breeding in Budgerigars. By W. G. Coward.—Blue, cobalt, yellow, green, olive-green and Grey-wing forms. (June).

Sclater's Crowned Pigeon with plate (July).
Some Birds of the Veld. By G. H. Clark (August).
Colored plate of the Zebra Finch by N. W. Cayley.
Also many avicultural notes, etc.

Bird Notes and News. XV, No. 2. Summer, 1932.
Birds in an Albanian Garden. By F. W. Borman.
Barn Owl and Buzzard. By G. B. Blaker.
Penguins and Penguin Eggs.—2000 dozen eggs sent from South Africa to London to be sold as food under government regulations!
Many notes on bird preservation.

The Emu. XXXII, Pt. 1. July, 1932.
The Yellow-billed Kingfisher. By W. D. K. MacGillivray.—With colored plate from painting by Cayley.
The Regent Bird. By Norman Chaffer.—Photographs of the bird and its haunts.
Observations of the Bird Population of the Sydney Botanical Gardens. By G. R. Gannon.—Thirty species recorded, of which thirteen are "all year around" birds.
An Historic Diary. By K. A. Hindwood.—Journal of the voyage of the *Lady Penrhyn*, 1787–89, by Surgeon Bowes. Besides interesting observations there are rough drawings of the Emu and White Gallinule.
Notes on the Satin Bower Bird. By A. J. Marshall.—Photographs of the bower.
Many local notes and lists of Australian birds.

The South Australian Ornithologist. XI, Pt. 7. July, 1932.
The Rudimentary Wing-Spur in Birds. By A. M. Morgan.
The Wedgebill (*Sphenostoma cristatum*). By J. Neil McGilp.
Numerous local notes.

Alauda (II). IV, No. 1. January–March, 1932. [In French.]
The Structure of the Remiges in Certain Rails Physiologically Flightless. By E. Stresemann.

Contribution to the Ornithology of Russia. By G. Dementieff—*Loxia curvirostra przewalskii* (p. 6), *L. c. mariae* (p. 7), *Muscicapa striata inexpectata* (p. 8) and *Luscinia suecica grottei* (p. 8) are described as new.

Molt and Sequence of Plumage in Birds. By O. Meylan.—A compilation with bibliography. With the exception of Dwight's papers only one by an American author is listed, those of Allen, Chapman, Wm. Palmer, Stone, etc., being omitted.

Contribution to a study of the Food of the Flamingo. By P. Madon.
Consideration of the Morphology and Systematic Position of Certain Shearwaters (*Puffinus*). By M. Mayaud. Many figures of crania, sterna, etc.

Ornithological Studies in North Africa during the Winter. By H. Heim de Balsac.—Field notes on various species.

On the Ornithological Literature of Russia. By G. Dementieff.

Alauda. (II) IV, No. 2. April-June, 1932. (In French.)

On the Avifauna of the Azores. By J. de Chavigny and N. Mayaud.—Introduction and general account of the fauna, with a bibliography.

Notes on the Kites. By R. Snouckaert van Schauburg.—A discussion of relationship and ranges.

The Voice of the European Owls. By Hans Stadler.—With elaborate method of symbols to represent the various notes.

Extracts from the Journal of Observations at the Port of Geneva for 1931. By R. Poncy.

Three Years of Russian Ornithological Literature. By G. Dementieff. (concluded).—A very useful bibliography.

On the Goldfinches of France. By N. Mayaud.—*Carduelis c. celtica* (p. 214) is described as new.

Bird Netting in the Eastern Pyrenees. By P. Paris.

Ornithological Studies in North Africa during Winter. By H. Heim de Balsac. Numerous notes on French birds.

L'Oiseau. II, No. 3. 1932.

Notes on the Birds of the Philippines. By M. Hachisuka.—The Parrots; with a colored plate.

Study of Some New or Interesting Birds Obtained on the Sixth Expedition to Indo-China. By J. Delacour.—New forms described in the genera: *Pitta*, *Seicercus*, *Garrulax*, *Pomatorhinus*, *Mixornis*, *Alcippe*, *Machlolophus*, *Arachnothera*.

Birds of Southern Laos. By P. Engelbach.—An annotated list of 386 species with photographs of scenery.

On the Birds Observed in Southern and Extreme Southern Tunis. By F. Chabot.

An Expedition to the Sakalava Country. By R. Decary.—The Delacour expedition to Madagascar.

Critical Notes on Some Hummingbirds in the British Museum. By J. Berlioz.

On the Denudation of Feathers at the Base of the Beak in the Rook. By A. Chappelier.—Study of banded birds.

Numerous notes on French birds.

Journal für Ornithologie. LXXX, Heft 3. July, 1932. [In German.]

On the Breeding Habits of *Remiz pendulinus*. By F. W. Merkel.—With excellent photographs of the delicate nests of this little Tit.

Observations of the Food of our Diurnal Birds of Prey and Owls. By O. Uttendörfer.

On the Influence of Salt Water in the Development of the Nasal Glands. By Hans Schildmacher.

On the Biology of *Phylloscopus nitidus viridanus*. By Herman Grote.
On the Alimentary Canal of Honey-eating Birds. By Hermann Desselberger.

Ticks as Bird Parasites. By Paul Schulze.

Observations and Questions on the Biology of the Raven. By Gustav Kramer.

The Geographic Forms of the Black Cock. By B. Stegmann.

The Bosphorus as a 'Landbridge' for Bird Migration between Europe and Asia Minor. By Otto Steinfatt.

Distribution and Winter Quarters of the Races of *Motacilla alba*. By Knud Paludan.

Remarks and additions to Nicoll's 'Birds of Egypt.' By J. Aharoni.

Ornithologische Monatsberichte. XL, No. 4. July, 1932. [In German.]

The Last Fourteen Days at a Harrier's Nest. By G. Thiede and A. Zankert.

On the Ornithology of Southeast Celebes. By Erwin Stresemann.—Twelve new species and subspecies described.

On the Correlative Relation between Egg Weight, Post Embryonic Growth and Consumption of Nourishment in Maturity, in the Bird. By F. Groebbels.

Der Vogelzug. III, No. 2. April, 1932. [In German.]

Early Summer Migration of Starling and Lapwing. By E. Schüt.

Remarks on the Food of Helgoland Migrants. By Franz Groebbels.

On the Winter Migration of 1931. By Walter Banzhaf.

The Invasion of Jays. By Werner Küchler.

Various notes on migration and bird-banding in Germany.

Der Vogelzug. III, No. 3. July, 1932. [In German.]

On the Migration of *Phoenicurus p. phoenicurus* and *P. ochrurus gibrallerensis*. By R. Drost and H. Desselberger.

Report on Bird Watching at Rossiten. By Ernst Schüz.

Beiträge zur Fortpflanzungsbiologie der Vögel. VIII, Nos. 2, 3, 4. March, May and July, 1932.

On the Biology of *Aquila pomarina*. By V. Wendland. (March.)

Observations of the Eider Ducks of Iceland. By Finnur Gudmundsson. (May and July.)

Some Swallow Statistics. By C. Matthiessen. (May.)

Tern Observations at Mellum. By Frieder Goethe. (July.)

Observations on the Biology of the Crane. By Hans Sieber. (July.)

Articles on the breeding of various species in Germany.

Der Ornithologische Beobachter. XXIX, Heft 5-9. February to June, 1932. [In German and French.]

Report of the Swiss Bird Study Station at Sempach for 1930. (February.)

Parasites of Birds. By H. Wegelin. (March.)

On *Pernis apivorus*. By E. Hänni.

The Arrival of the White Storks to their Breeding Places. By E. and T. Schüz (May).

On the Food of the Woodpeckers. By O. Meylan (May).

Remarks on the German and German-Swiss naming of Birds. By A. Masarey (June).

The Swiss Archives of Ornithology. I, No. 1. July, 1932. [In German and French.]

A new journal intended to cover the more scientific study of birds leaving to the "Ornithologische Beobachter" the field of popular bird study and protection. It is published by the same society at 3 franks per year, Schweizer Gesellschaft für Vogelkunde, 26 Spitalgasse, Berne.

Chlidonias l. leucopareia a Breeding Bird at Untersee. By H. Noll.

Notes from the Camargue. By R. Hainard.

The Serin (*Serinus canaria serinus*) in Western Switzerland. By O. Meylan.

On Mathematical Handling of Ornithological Problems. By U. A. Corti.

There are some excellent illustrations from photographs and pen drawings.

Orgaan der Club van Nederlandsche Vogelkundigen. V, No. 1 July, 1932. [In Dutch.]

On the Races of *Picus canus*. By Baron Snouckaert van Schauburg.

Wieringermeerpolder in the Breeding Season of 1932. By P. G. Op de Coul.

The Jack-daw as a Hole Nester. By A. B. Wigman.

Numerous notes on birds of the Netherlands.

An excellent index of the "Jaarbericht" of the Club, 1911 to 1928, vols. i-xvii, has just been published.

El Hornero. V, No. 1. June, 1932. [In Spanish.]

Birds of the Valley of Reartes (Cordoba). By Alberto Castellanos.

The Caprimulgids. By Jose A. Perryra.

Amblycercus solitarius in Captivity. By Pedro Serie.

Among the notes is the record of recovery in Buenos Ayres of a Swainson's Hawk banded in Alberta; on parasitism of *Legatus leucocephalus*; an illustrated account of the Delacour zoological park at Cleres, France; on food of various species; on curious nesting sites of the Hornero; on the types of birds in the National Museum at Santiago, Chile, with list; etc.

Tori. VII, Nos. 33-34. May 31, 1932. [In Japanese unless otherwise stated.]

The Birds of Sado Island, Japan. By Prince Taka-Tsukasa.

On Korean Birds Collected by Mr. H. Orii. By Marquis Yamashina.—
In English; notes on 279 species.

On Specimens from the Bonin Islands. By Marquis Yamashina.

Some New Additions to the Birds of the Borodino Islands. By Nagamichi Kuroda.

A Collection of Birds from the Island of Bali. By Nagamichi Kuroda.—
In English; notes on 31 species.

Short notes on various Japanese birds.

OBITUARIES.

Just as we go to press we learn of the death on September 22, 1932, of Outram Bangs. Elected an Associate of the Union at the second meeting, in 1884, there are, we believe, only seventeen whose period of membership exceeds his. For many years curator of birds in the Museum of Comparative Zoology at Cambridge, Bangs had, perhaps, a better knowledge of the birds of the world than any other American ornithologist now living and was known throughout the scientific world for his contributions to systematic ornithology.

His generous nature and cordial personality contributed to the pleasure of all who visited the M. C. Z. and many are those who have to thank him for assistance in their work. His associates at Cambridge will feel keenly the loss of an able co-worker and a true friend, while American ornithology can ill afford to lose a man of his outstanding ability.

An appropriate memorial upon his life and work will appear in a future number of 'The Auk.'

DONALD RYDER DICKEY, a Member of the Union and a widely known ornithologist and authority on Pacific coast zoology, died April 15, 1932, at his home in Pasadena, California. He was born March 31, 1887, in Dubuque, Iowa, his father, Ernest May Dickey, being superintendent of the Diamond Joe Steamship Line; his mother was Anna Roberts Ryder.

Donald Dickey was of Scotch descent, his paternal grandfather having emigrated from Glasgow and settled in Illinois about the year 1850. His early education was mostly received in the Thacher School, California, and he entered the University of California in 1906. He subsequently became a Yale freshman and graduated B.A. with honors in 1910. During his University career he had among other affiliations membership in Psi Upsilon, Elihu and Phi Beta Kappa. In 1925 he was made an Hon. M.A. by Occidental College.

About the time of graduation Dickey suffered seriously from ill health and in 1910 came to California seeking restoration to his former vigor. Three years passed before he was able to undertake continuous, active work. Meantime, always interested in vertebrate zoology, he began to collect and study birds and mammals and being in possession of abundant means he was able in the course of ten years to build up not only an excellent working library but to gather over 50,000 specimens of vertebrates—one of the largest collections in the country. During this period he paid special attention to ecology and to field work, and gave much time to photography of wild life. He traveled widely, making large collections of unusually fine photographs and moving pictures of birds and big game. He made particular studies of the fauna of Laysan, Lower California, and numerous other localities along the Pacific coast. Reports of a few of these activities are published in 'The Auk,' 'The Ibis,' 'Journal of Mammalogy,' 'Proceedings of the Biological Society of Washington,' and in other periodicals.

An excellent and well illustrated account of this outstanding work is published in the September, 1926, number of 'World's Work' under the caption 'The Martin Johnson of America.' Many reproductions of Dickey's pictures also serve to illustrate Dawson's 'Birds of California,' Bent's 'Life Histories,' and other treatises.

He left several important but unpublished manuscripts in which are incorporated additional systematic accounts of his field operations. These will very likely appear in print later on; some of them in collaboration with his associate Adriaan J. van Rossemi. During the Great War Dickey was attached as Captain and instructor to the Small Arms Firing School at Camp Perry, Ohio.

In addition to membership in the A. O. U., he belonged to numerous other organizations, including the Cosmos Club and the Yale Club of New York. He was since 1926 Research Associate in Vertebrate Zoology at the California Institute of Technology; a trustee of The Southwest Museum, Los Angeles, 1920-1928, and President of the Board, Pasadena Hospital, 1924-1925.

Dickey took a particular interest in the Cooper Ornithological Club (of which he was a governor from 1926 to the date of his death) and in the prosperity of its well-known organ "The Condor."

On June 15, 1921, he married Florence Van Vechten, daughter of Simon Jones Murphy (Harvard '74) and Helena Bogardus of Claymont, Charles Town, West Virginia. Issue a son, Donald Ryder junior.

Donald Dickey was a tall, handsome man with a charming manner, and a genial, generous personality that attracted and retained many warm friends. His untimely death is a distinct blow to the cause of zoological science along the Pacific coast.—C. A. W.

RALPH HOFFMAN, a Member of the American Ornithologists' Union, met a tragic death in a fall from a cliff on San Miguel Island, Calif., July 21, 1932. He had gone to the island with W. F. Daniell, of Montecito, and James McMillan, of Los Angeles, in search of fossils and plants, and while attempting to scale a steep cliff, two miles from Cuyler Harbor, met with the accident which resulted in his death.

Mr. Hoffman was the son of Ferdinand and Caroline Bullard Hoffman. He was born in Stockbridge, Mass., November 30, 1870, educated at Williston Academy and graduated from Harvard University in 1890, and in 1894 he married Miss Gertrude Wesselhoeft, of Cambridge, Mass. By profession he was a teacher and began his work in the Brown and Nichols School in Cambridge. In 1910 he became headmaster of the Country Day School in Kansas City, Mo., in 1917 he moved to St. Louis where he became headmaster of the Country Day School, and three years later accepted a position in the Santa Barbara School for Boys near Carpinteria, Calif. and in 1926 he was elected Director of the Santa Barbara Museum of Natural History, a position which he held at the time of his death.

Mr. Hoffman was an enthusiastic ornithologist, botanist, and all around naturalist. One of his first publications was a memorial to Frank Bolles, prepared for a committee of the Nuttall Ornithological Club in 1894. He also read before the Club the results of his observations made in Germany in the same year, which appeared in "The Auk" under the title 'Summer Birds of the Rhine,' (1896, pp. 297-312). He was co-author with Walter Faxon of 'The Birds of Berkshire County, Massachusetts,' 1900, and from time to time contributed notes to 'The Auk,' 'Bird Lore,' and 'The Condor,' chiefly on the birds of Massachusetts, Missouri, and California. In 1904 he published his 'Guide to the Birds,' and in 1927 his 'Birds of the Pacific States.' In botany he contributed occasionally to 'Rhodora,' published a 'Flora of Berkshire County, Massachusetts,' in 1922, and in 1930, in coöperation with several other collaborators the 'Cacti and Other Succulents' of the Santa Barbara region. The first part of his 'Notes on the Flora of the Channel Islands, Santa Barbara County,' was in press at the time of his death and the paper will appear in installments in the 'Bulletin' of the Southern California Academy of Sciences. In the course of his scientific work he became identified with several ornithological and botani-

cal organizations. He was elected an Associate of the American Ornithologists' Union in 1893 and a Member in 1901, a member of the New England Botanical Club, the Nuttall Ornithological Club, and a life member of the Cooper Ornithological Club.

By nature and by training Hoffman was an ideal museum director. Cheerful, enthusiastic, companionable, and experienced teacher, he knew how to enlist the interest of young people and the public and to interpret the facts of natural history in a way to attract the attention and arouse the curiosity of even the casual observer. In recent years his activities were devoted chiefly to botany but he still maintained his deep interest in birds.—T. S. P.

GEORGE FREAN MORCOM, an Associate of the American Ornithologists' Union since 1886, passed away at his residence in Los Angeles, California, March 25, 1932. Mr. Morcom was born in Aberystwith, Wales, March 16, 1845, but was brought to St. Agnes, Cornwall, at an early age, and there his childhood and young manhood were spent. He was educated at Taunton College; then followed a period of pleasant years devoted mostly to outdoor sports, with a little desultory attention to palaeontology and ornithology. As a young man he came to America, to settle down at Chicago in the hard grind of the commission business, on South Water Street, the once famous center of that trade. There he remained, with occasional visits to England and one to California, until December, 1891. By that time the unremitting labor to which he had subjected himself had worn his health almost to the breaking point; fortunately this same labor had resulted in ample means for retirement from active business. He moved to southern California, where he settled down for the remainder of his life, making, however, frequent business trips to Chicago and occasional visits to England. During his years of residence in Chicago he had become one of a coterie of ornithologists (comprising among others Ruthven Deane, B. T. Gault, H. K. Coale and J. S. Hancock), who, as a club, held meetings for some years and published two numbers of an excellent journal, the 'Bulletin of the Ridgway Ornithological Club.' In the rural surroundings of southern California of the early "nineties" there was every opportunity for shooting and bird collecting, activities to which his time was largely devoted, with tennis and, later, golf as minor interests. He built up a good collection of bird skins and birds' eggs, but, curiously, never felt the slightest urge to write for publication; nor could he ever be induced to give the most informal talk before any of the societies to which he belonged. As the years passed shooting was gradually given up, largely from a growing distaste for taking life of any sort, but tennis continued to be a source of keen enjoyment for a much longer period. Living birds never ceased to be of interest; for the birds of his garden there was a bounteous table spread up to the very end. Mr. Morcom was president of the Ridgway Ornithological Club from 1887 to 1889; he was president of the Southern Division of the Cooper Ornithological Club for six years,

1907 to 1912. He had an excellent ornithological library, and it was a matter of pride with him that his set of the 'Nuttall Bulletin' and 'Auk' had been obtained by subscription from the first issue of the Bulletin. Two birds have been named after him, *Dendroica aestiva morcomi* Coale, and *Athis morcomi* Ridgway. During the earlier years of his collecting activities Mr. Morcom made various gifts of specimens to the British Museum, including the type of *Colinus ridgwayi*; he also gave eggs and birds to the United States National Museum, mostly through Major Bendire, and skeletal material to Dr. R. W. Shufeldt. His collection of birds was given to the California Academy of Sciences in 1929. The Cooper Club filled a large place in his life during later years, most of his intimate friends being found within its membership. How much aid the Club received from him can be found mostly in unpublished annals; various younger members thereof know, each one, how much they owe to personal assistance from the same source.—H. S. SWARTH.

FRANCES MANWARING MINER GRAVES (Mrs. Charles Burr Graves), an Associate of the American Ornithologists' Union since 1905, died of pneumonia at New London, Conn., April 9, 1932.

She was the daughter of Mr. and Mrs. Charles H. Miner and was born in New London, Oct. 14, 1863. She was descended from a long line of New England ancestry dating back to Thomas Miner, and William Brewster who came over on the Mayflower. She was educated in the public schools of New London, graduated from the Young Ladies High School, attended Smith College and in 1891 married Dr. C. B. Graves.

From early childhood Mrs. Graves had a keen interest in natural history especially in birds and flowers. She had a good field knowledge of birds, was an excellent botanist and developed considerable skill in painting wild flowers. She was a member of the New London Garden Club, a charter member of the Connecticut Botanical Society, a member of the National Association of Audubon Societies, the Audubon Society of Connecticut, and Girl Scout Commissioner for the New London district.

Mrs. Graves was a regular contributor of monthly notes to the State Ornithologist of Massachusetts and occasionally contributed notes to 'The Auk.' She was a frequent attendant at the meetings of the Union where she had many friends and often took part in the programs. Those who attended the Pittsburgh meeting will recall her reference to the nictitating membrane of the Water Ouzel and the discussion which it aroused at the time and at subsequent meetings.—T. S. P.

ASHTON ERASTUS HEMPHILL, an Associate of the American Ornithologists' Union since 1919, died at Holyoke, Mass., May 5, 1932, in the 83rd year of his age. He was born at Acworth, Sullivan County, N. H., Sept. 17, 1849, the son of Freeland and Ludia McKeen Hemphill, and was descended from Scotch-Irish ancestry on both sides of the family. His early years were spent on the farm and his education was largely obtained

in the country district school and the high school at Walpole, N. H. In 1871 he entered the drug business but in 1882 was compelled by ill health to abandon it.

Mr. Hemphill never married. The later years of his life were spent largely in fostering civic movements in Holyoke and in connection with the Atlantic Inland Waterways. He served three terms in the State Legislature in 1881, 1885, and 1898. In his later years he traveled extensively. He was a member of the Appalachian Club, the Audubon Society, the Public Library, but did not become identified with the American Ornithologists' Union until 70 years of age, although for years he had found great pleasure in observing bird life and in assisting others who were similarly interested. He knew the wild flowers as well and not only loved the outdoors but took pleasure in sharing its attractions with others.—T. S. P.

WILLIAM JOSEPH DURBOROW, an Associate of the American Ornithologists' Union since 1928, died at Harrisburg, Pa., July 28, 1932. He was born at Manayunk, Pa., April 21, 1872. He began museum work as a helper to Boyd P. Rothrock, now Curator of the Pennsylvania State Museum, who was preparing an exhibit for the St. Louis Exposition. Under instruction he became an excellent taxidermist. For the past twenty-five years he has been taxidermist at the State Museum and lately assistant curator. He assisted in mounting the group exhibits at the State Museum and prepared specimens of skins. He was expert in making casts of reptiles and fish, an excellent field collector and mechanically ingenious. He was also an expert fly-fisherman.—HAROLD B. WOOD.

HENRY WALKER HAND, known to many members of the Union as the resident ornithologist of Cape May, N. J., died suddenly on September 14, 1932, in the sixty-third year of his age. While Mr. Hand was not a member of the A. O. U. his name appears constantly in publications relating to the bird life of New Jersey and through the courtesy of a member he received 'The Auk' and followed the work of the Society with the greatest interest taking especial delight in the visit of the Union to Cape May in 1929. He was remarkably well informed on the natural history of south Jersey and shared his knowledge generously with anyone in search of information. He was reared in the seafaring atmosphere of old Cape May and prided himself on being able to trace his direct ancestry back to Shamgar Hand who was one of the original whaling community that settled on the peninsula early in the seventeenth century.—W. S.

NOTES AND NEWS.

By the time this issue is received by our members those intending to attend the Stated Meeting of the Union at Quebec will probably have made their arrangements for the trip. We trust that a large number will find it possible to accept the invitation of our Quebec friends to be present and to enjoy what will undoubtedly be a notable occasion.

For the benefit of those who may not have been able to arrange their plans before we repeat that the general sessions will be on October 18, 19 and 20, at Laval University; the headquarters are at the Chateau Frontenac Hotel, and the Secretary of the Local Committee is Mr. R. Meredith, 121 Moncton Ave., Quebec.

WE LEARN from the press service of the U. S. Department of Agriculture that by act of Congress approved July 14, 1932, the District of Columbia has been made in effect a bird sanctuary, by abolishing shooting in certain portions where it was still permitted. This will maintain the great accumulation of ducks on the waters of the Potomac which has in recent years attracted so much attention, and, by establishing a refuge for the birds from gunning farther down the river, will doubtless greatly increase the numbers of water-fowl congregating in the District.

The preservation of the Crescent Lake Migratory Bird Refuge has, we learn, been assured by the dismissal, by the Nebraska Department of Public Works, of an application to drain the lakes and use the water for irrigation purposes. The Federal Government had acquired some 35,000 acres of land and small lakes in this ideal locality for a refuge for nesting and migratory water fowl and the Biological Survey, along with various conservation organizations, strenuously opposed the draining with the result above announced, which should serve to discourage such ill-advised proposals elsewhere.

IN FEBRUARY last the Bird Haven tract including the former home of Robert Ridgway, was given by the Bird Haven Memorial Association to the University of Chicago along with the funds for its upkeep and it will in future be administered through the University.

Mrs Charles L. Hutchinson, who contributed a large part of the original \$50,000, raised for the preservation of the tract as a memorial to Mr Ridgway, has bought ninety-seven acres of land adjoining the original eighteen acres which makes it possible to carry out Mr. Ridgway's ideal. It is hoped that botanists and zoologists will find Bird Haven an attractive place in which to carry on experimental work and observational studies on plant and animal life.

SENATOR Walcott has reported on the advisability of the Federal Government acquiring the 390,000 acres on the border line of Georgia and Florida

constituting the Okefenokee Swamp, as a wild life reservation, which is advocated by the Committee on Conservation of Wild Life Resources, of which he is chairman, and by the Biological Survey. The latter is to receive proposals from the several owners of the swamp and necessary legislation introduced when these are satisfactory and the financial status of the Federal Government permits. Much interesting information is contained in the report.

THE OPEN season for ducks for the coming season has been fixed at two months and the bag-limit at fifteen but not more than five Eiders and ten (of each or in aggregate) of Canvasbacks, Redheads, Scaup, Ringnecks, Teal, Gadwalls or Shovellers. The period ranges between October 1 and January 15 differing in the several districts. The Ruddy Duck and Bufflehead with the Wood Duck, are absolutely protected at all times.

Dr. T. Gilbert Pearson, a member of the Federal Advisory Board which suggested the seasons etc., has published an independent circular in which he states that his proposal to limit the season to forty-five days was lost, also one to prohibit shooting from baited shooting grounds upon which the Biological Survey had as yet made no report. Duck hunters on Currituck Sound and Back Bay, Va., will rejoice in the restoring the lock in the Albemarle and Chesapeake Canal which was removed in 1922, and thus permitted the inflow of salt water which killed the water plants upon which the ducks fed and forced the latter to go elsewhere. How long it will require for the water plants to re-establish themselves it is not possible to determine but at least the old conditions are restored.

Another item of interest to duck hunters is the availability of an educational motion picture in two reels on 'Duck Sickness.' Copies may be secured from the Biological Survey, U. S. Dept. of Agriculture.

CANADA we learn has set aside 560,000 square miles of territory as bird sanctuaries, of which thirty-one are now operated by the Dept. of the Interior under the Migratory Birds Convention Act.

A RECENT pamphlet issued by the Dept. of Agriculture under the title 'Policies of the Bureau of Biological Survey relative to the Control of Injurious Birds' furnishes much information of interest. The general policy of the Survey we are glad to see is "to hold bird-control work to the minimum." The field men of the Survey must notify State officials of contemplated bird-control work and secure necessary authority in the case of State protected species. The Survey is opposed to indiscriminate anti-Crow campaigns and similar campaigns against birds of prey and to the general destruction of Vultures.

From a circular to Field Men of the Survey we find the welcome warning: "The preparation and distribution to the public of poisoned baits for birds should not be undertaken by members of the Biological Survey." We trust that this may be extended to cover baits in mammal control, as well, otherwise it would seem to be of little value.

THE EXCELLENT plates of Forbush's 'Birds of Massachusetts' by Louis Agassiz Fuertes and Allan Brooks have been issued in a separate volume to be had from Room 118 State House, Boston, Mass., all orders to be accompanied by check or money order for \$1.75, payable to the Secretary of the Commonwealth. This work consists of probably the finest set of colored plates of the birds of the Eastern States that has ever been published and the price is merely nominal.

FROM an issue of the 'United States Gazette,' published on July 1, 1832, a little more than one hundred years ago we quote: "Mr. Audubon has just returned to our city [Philadelphia] in excellent health. His arduous excursions during the last nine months in the Carolinas, Georgia, East Florida and the Tortugas have been richly repaid. During this comparatively short period Mr. Audubon has, by his own gun, acquired nine species of birds altogether new to the United States. We have seen these birds and it has been our good fortune also to see inimitable drawings he has made of them, with the interesting landscapes so peculiar to the southern country and which vie with them in beauty and interest. Besides these Mr. Audubon has brought with him about 2,000 specimens of rare Southern birds in the highest state of preservation together with an immense quantity of shells and plants. It is impossible to say too much in praise either of the talents or perseverance of this unrivalled naturalist."

THE "last Heath Hen" which was supposed to have succumbed reappeared in his old haunts on Marthas Vineyard Island on February 9, 1932, after an interval of nine months. Thereafter it was seen at regular intervals until March 11. It has been the lone survivor since December 8, 1928.

THE Ornithological Society of Japan has issued some beautiful picture postal cards of rare Japanese birds in packages of four each.

A TESTIMONIAL dinner was tendered to Dr. Amos W. Butler, Indiana's veteran ornithologist by the Hamilton County Nature Club, at Noblesville, Ind., on June 24, 1932, with addresses by S. E. Perkins, III, Marcus W. Lyon, Jr., Rev. Francis H. Gavisk, W. A. Mills and Earl Brooks, with a response by Dr. Butler. The proceedings are published in a little pamphlet issued by the society.

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